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FOREIGN MILITARY WEAPONS AND EQUIPMENT (U)

Vol. I
ARTILLERY (U)

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FOREWORD

The object in publishing essential data on artillery of German and Japanese origin in advance of the publication of Section IV is to present information on these weapons as they are used or held in significant quantities by the Soviet Satellite nations (Section II).

The publication is in loose-leaf form to facilitate inclusion of additional material at such time as Section IV is published.

Items are presented according to country of manufacture. It should be noted that, although they may be in use or held in reserve by a Satellite country, they may be regarded as obsolete in the country of origin.

PAMPHLET
No. 30-4-4

DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., *29 August, 1955*

FOREIGN MILITARY WEAPONS AND EQUIPMENT (U)

VOL I. ARTILLERY (U)

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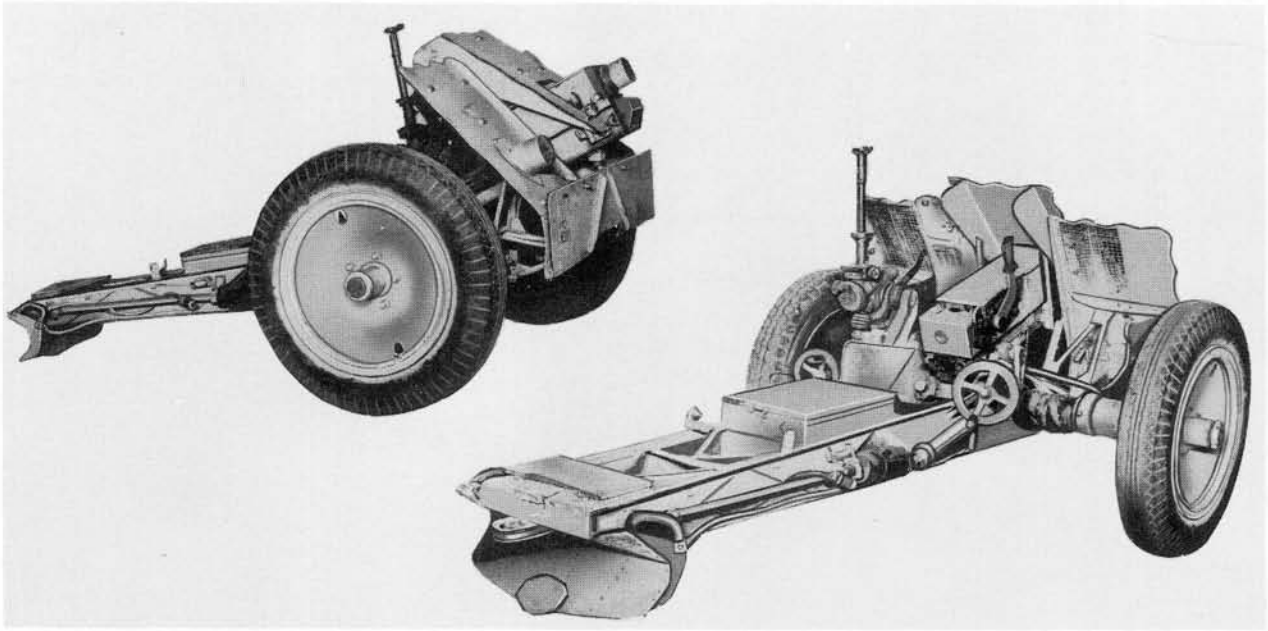
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75-mm Light Infantry Gun M18

(7.5 cm Leichtes Infantry Geschütz 18 (7.5 cm Le. I. G. 18))



This weapon was developed by Rheinmetall-Borsig in 1927 and was the first of a series of new infantry support pieces. It is of a rather novel design, the tube being totally enclosed in a square housing having a fixed breech block. To load the weapon, the tube is tilted up clear of the breech block by the operation of a lever.

The gun is mounted on a light box trail carriage and is equipped with either wooden spoked wheels in the horse-drawn version, or with disc wheels and pneumatic tires in the motorized version.

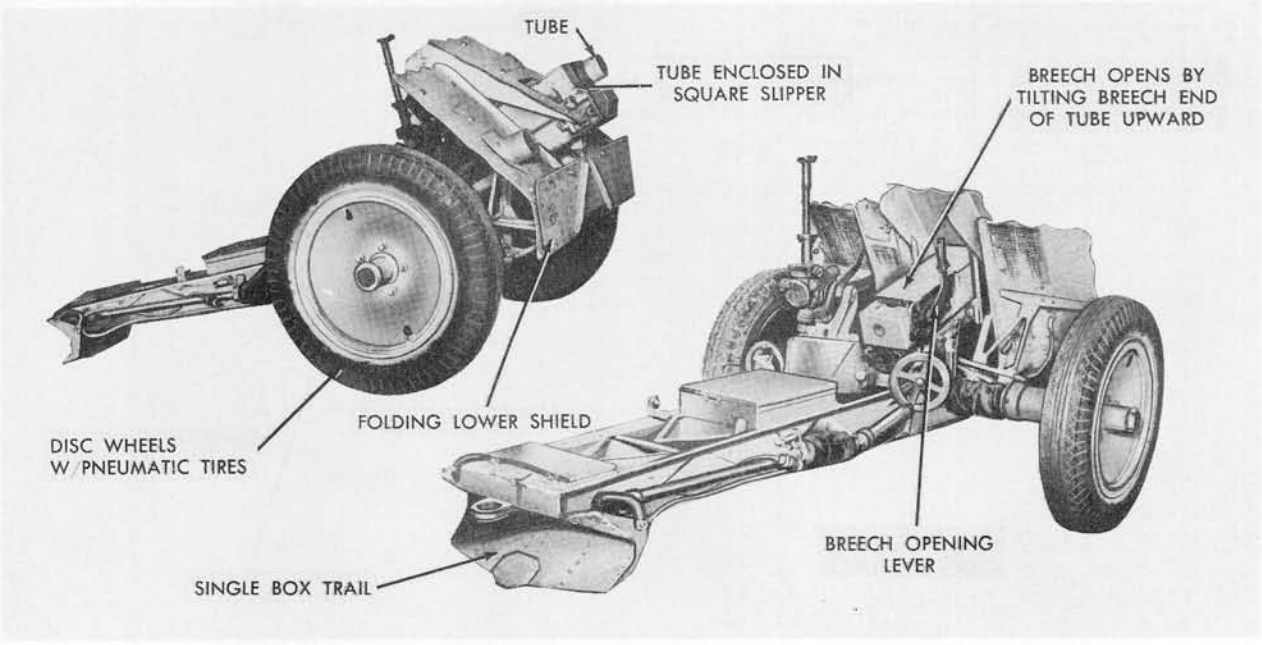
A variant, also designed by Reinmetall-Borsig, was introduced into the German service for mountain troops in 1937 as the "7.5 cm Le Geb. I. G. 18." The gun is the same as for the standard model, but a split trail carriage is used, the trail legs being jointed to allow either "short" or "long" trail legs to be used. The trails have detachable spades. This equipment breaks down into 6 pack or 10 man-loads.

HE, HEAT, and Smoke rounds are fired from both equipments; charges I to V are used with the HE and smoke, and Charge V and a special charge with the HEAT shell.

It is believed to be held in reserve stocks in Bulgaria and East Germany.

75-mm Light Infantry Gun M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight (Motor-drawn version):	
In firing position	510 kg (1,124 lbs)
In traveling position	515 kg (1,235 lbs)
Length of tube (calibers):	
Without muzzle brake	11.8
Elevation limits	−10° to +73.5°

II. AMMUNITION (main types and projectile weight):

HE	5.45 kg (12.02 lbs)
HEAT (Model 38 B)	3.5 kg (7.72 lbs)

III. PERFORMANCE:

Maximum horizontal range:	
With supercharge	4,600 m (5,032 yds)
With normal charge	3,550 m (3,884 yds)

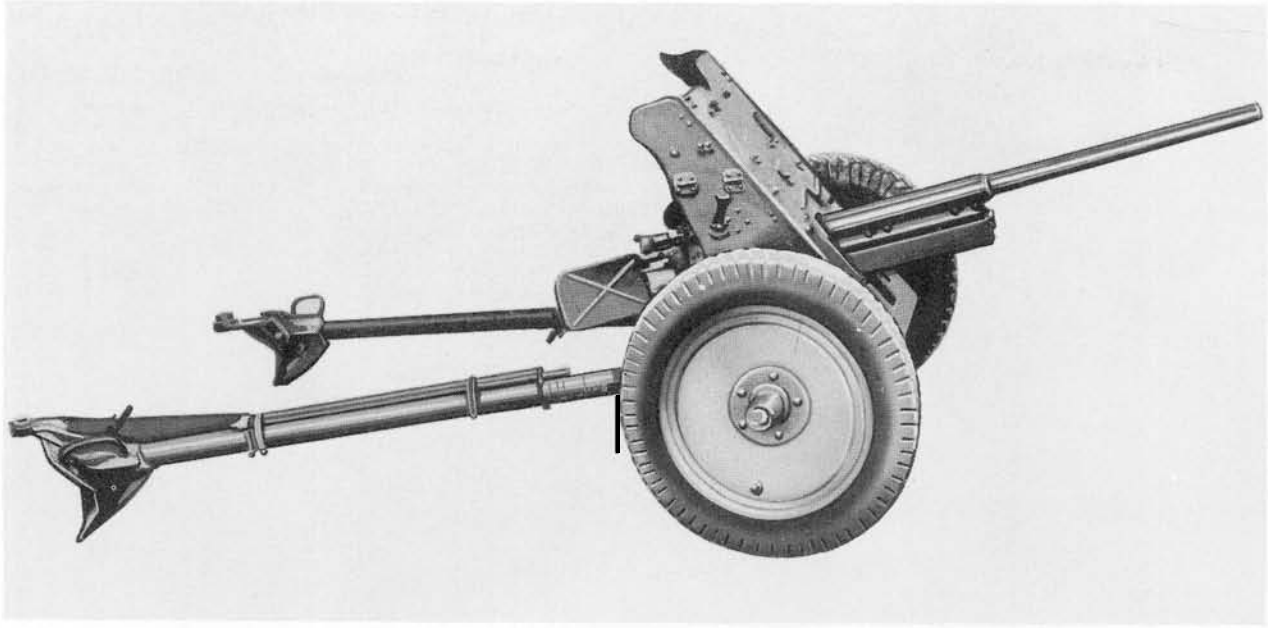
III. PERFORMANCE—Continued

Muzzle velocities:	
HE (Supercharge)	260 m/s (853 fps)
HE (normal)	221 m/s (725 fps)
Rate of fire	8–12 rpm
Armor penetration:	

Round	Angle of attack	Range	Penetration
HEAT M38 A	30°	Any	75-mm (2.95 in.)
HEAT M38 B	30°	Any	90-mm (3.54 in.)

37-mm Antitank Gun

(3.7 cm Panzerabwehr Kanone (3.7 cm Pak))



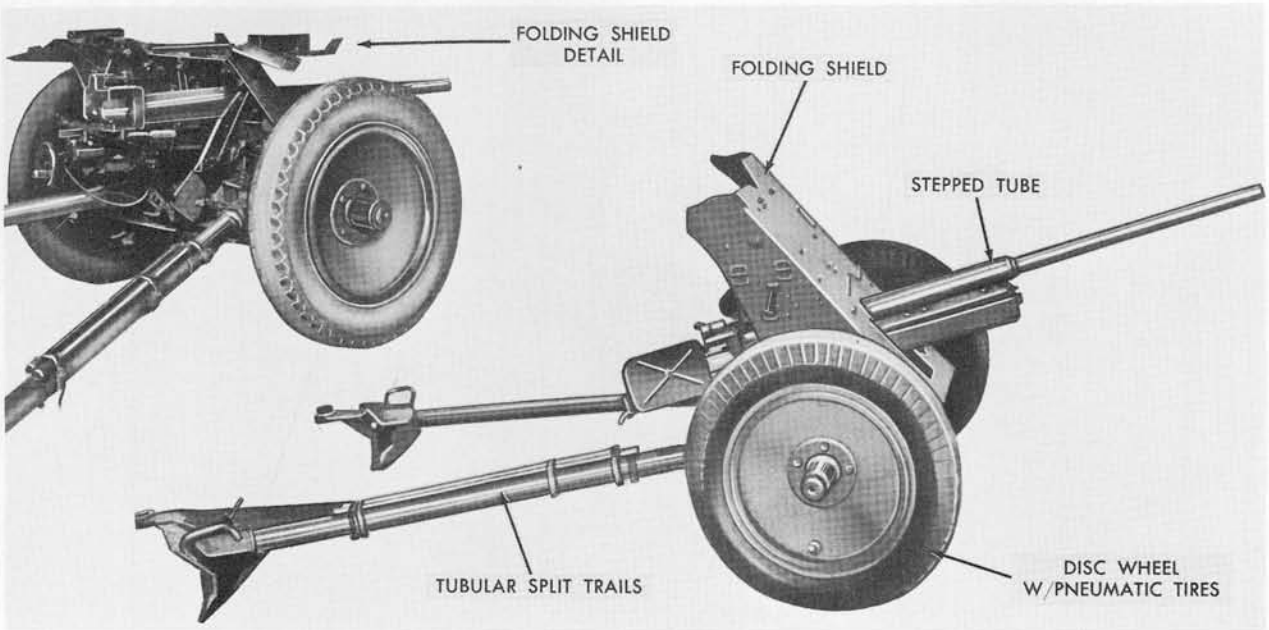
This was Germany's standard infantry antitank gun at the outbreak of World War II. In 1939 it was undoubtedly as good as any antitank gun in use by the armies of the major powers; however, it was not an outstanding weapon and the penetration performance at angles of attack other than normal was, even then, considered disappointing. it is a highly mobile weapon, normally towed on two-wheeled carriage but also capable of being carried in a light motor vehicle. Because of its light weight it was well suited for airborne use. It was introduced into the German service in 1936.

The Soviet 37-mm and later 45-mm antitank guns, as well as the United States 37-mm early World War II antitank gun, were all close copies of this gun. Beginning in the latter part of 1940 it was gradually replaced as standard by the 50-mm Pak 38, although the introduction of a HEAT grenade launched from the muzzle kept it in service throughout the war in areas of lesser importance.

It is believed to be held in reserve in Bulgaria and Czechoslovakia.

37-mm Antitank Gun

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	37-mm (1.46 in.)
Weight:	
In firing position	440 kg (970 lbs)
In traveling position	450 kg (992 lbs)
Length of tube (calibers):	
Without muzzle brake	45
Elevation limits	−142 to +445 (−8° to +25°) mils
Total traverse	1,066 mils (60°)

II. AMMUNITION (main types and projectile weight):

AP	0.685 kg (1.5 lbs)
HVAP	0.368 kg (0.8 lbs)
HEAT Stick Grenade	8.5 kg (18.74 lbs)

III. PERFORMANCE:

Maximum horizontal range (w/HE)	6,800 m (7,439 yds)
Muzzle velocity:	
HE	745 m/s (2,444 fps)
HVAP	1,020 m/s (3,347 fps)
HEAT Stick Grenade	110 m/s (361 fps)

III. PERFORMANCE—Continued

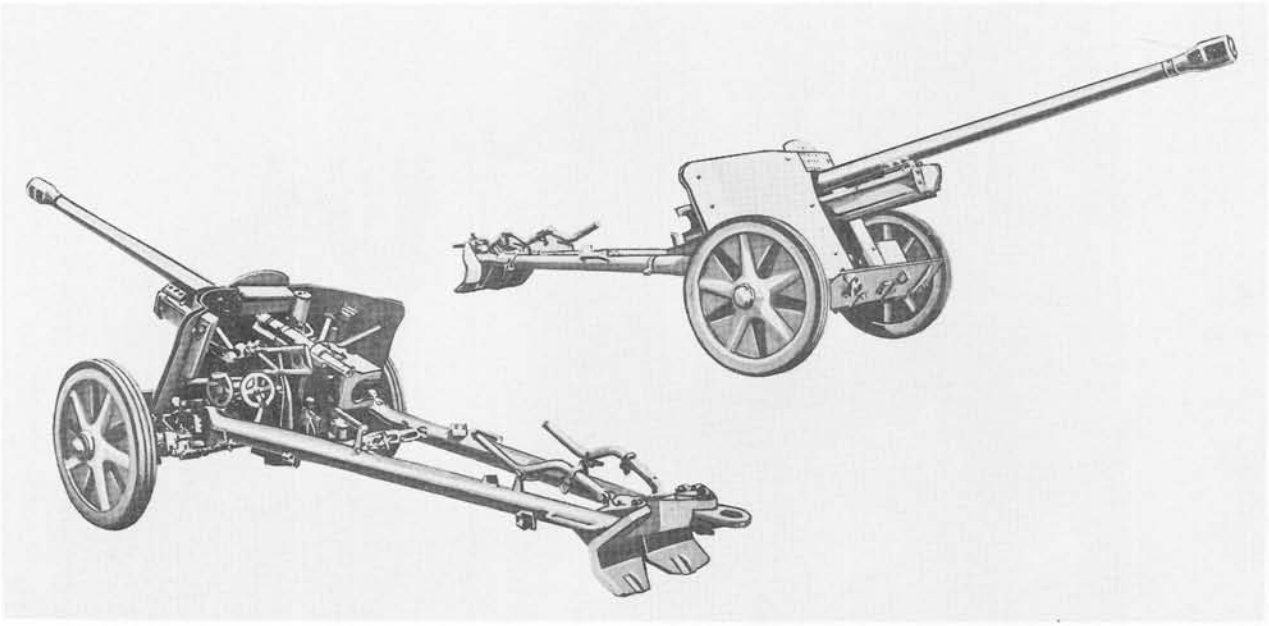
Rate of fire: 12–15 rpm

Armor penetration:

Round	Angle of attack	Range		
		100 m (109 yds)	600 m (656 yds)	Any range
AP	30°	34-mm (1.34 in.)	27-mm (1.06 in.)	
HVAP	30°	64-mm (2.52 in.)	22.5 (0.89 in.)	
HEAT Stick Grenade	30°			180-mm (7.09 in.) (150 yds is effective range against moving targets)

50-mm Antitank Gun M38

(5 cm Panzerabwehr Kanone 30 (5 cm Pak 38))



Design of the 5 cm Pak 39 commenced in 1938 and late in 1940 it began to replace the 3.7 cm Pak in the German Army.

Its design incorporated a muzzle brake and torsion bar suspension. These two features were employed in the design of all subsequent German single axle field and antitank weapons. They contribute materially in keeping down the overall weight of equipment since they permit the use of a lighter recoil system and carriage.

By 1941 standards the 5 cm Pak 38 was a good antitank gun. The German air force mounted the gun in some ground attack aircraft such as the JU–88.

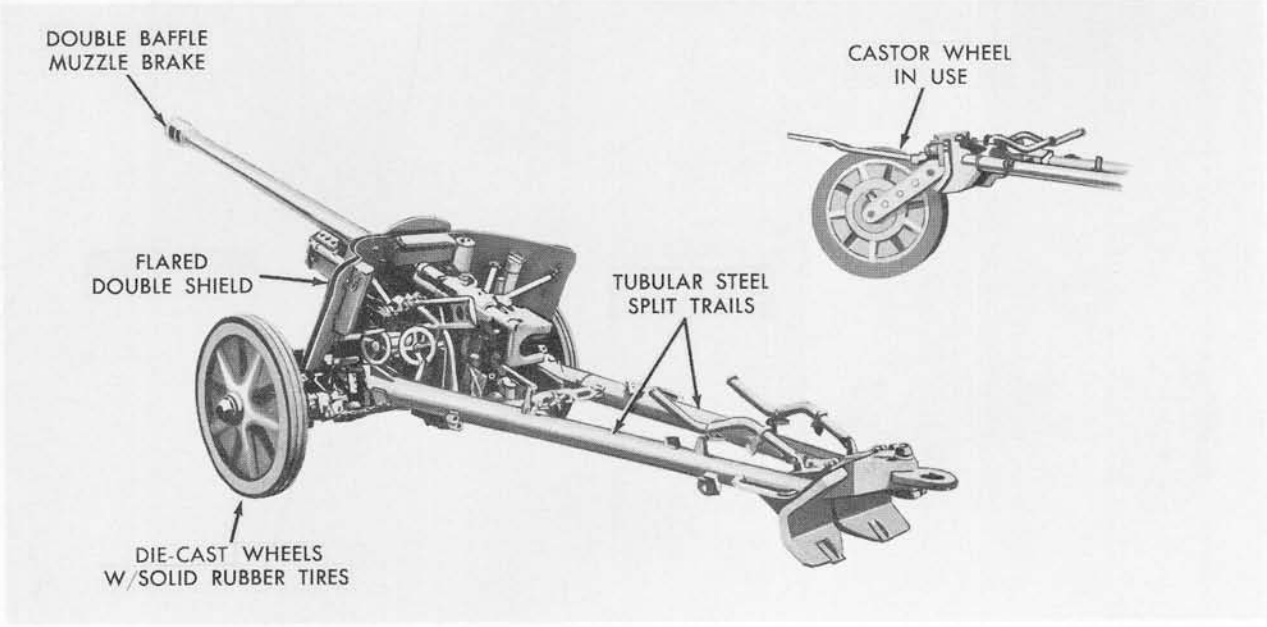
The 5 cm Pak 38 was supplanted but never completely replaced by the 7.5 cm Pak 40. In mid-World War II it was provided with a HEAT stick grenade which was effective only at quite close range, but had a considerable (7-inch) penetration.

The only easily perceptible differences, except for the caliber, between this gun and its successor the 75-mm Pak 40, are in the overall dimensions.

Gun	50-mm Pak 38	75-mm Pak 40
Overall length	15 ft. 7 in.	20 ft. 4 in.
Overall height	3 ft. 8 in.	4 ft. 1 in.
Overall width	6 ft.	6 ft. 10 in.

50-mm Antitank Gun M38

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	50-mm (1.97 in.)
Weight:	
In firing position	1,000 kg (2,205 lbs)
In traveling position	1,062 kg (2,341 lbs)
Length of tube (calibers):	
Without muzzle brake	60
Elevation limits	−142 to +480 mils (−8° to +27°)
Total traverse	1,155 mils (65°)

II. AMMUNITION (main types and projectile weight:

HE	1.82 kg (4.01 lbs)
AP	2.06 kg (4.54 lbs)
HVAP	0.925 kg (2.04 lbs)

III. PERFORMANCE:

Maximum horizontal range:	
AP	1,500 m (1,640 yds)
HE	2,400 m (2,626 yds)

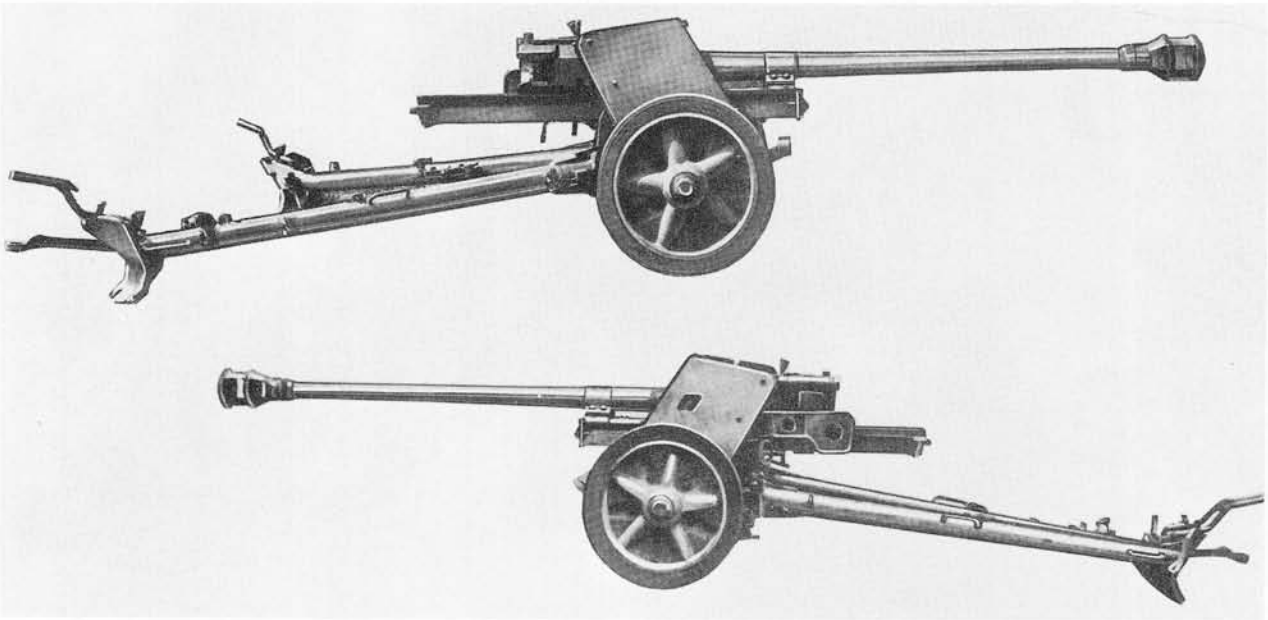
III. PERFORMANCE—Continued

Muzzle velocity:	
HE	549 m/s (1,801 fps)
AP	835 m/s (2,739 fps)
HVAP	1,180 m/s (3,870 fps)
Rate of fire	12–15 rpm
Armor penetration:	

Round	Angle of attack	Range		
		100 m (109 yds)	1,000 m (1,094 yds)	Any
AP	30°	69-mm (2.72 in.)	48-mm (1.89 in.)	----
HVAP	30°	130-mm (5.12 in.)	38-mm (1.5 in.)	----
HEAT Stick Grenade	30°	----	----	180-mm (7.09 in.) (Effective range 150 yds)

75-mm Antitank Gun M40

(7.5 cm Panzerabwehr Kanone 40 (7.5 cm Pak 40))



This weapon was introduced into service in the German Army in 1941 and was adopted as the standard infantry antitank gun. The design is identical to that of its predecessor, the 5 cm Pak 38, employing a muzzle brake, tubular steel trails, and solid rubber tires. Although its penetration performance was considered very satisfactory, the weight was judged to be excessive. However, it was the best towed antitank gun, of a weight that could be manhandled, available to the Germans during World War II.

The principal recognition features are the combination of double baffle muzzle brake, the hinged lower shield below the main shield, and between the wheels, the die-cast wheels with solid rubber tires, and the castor wheel (for manhandling).

The only easily perceptible differences except for the caliber between this gun and its predecessor, the 50-mm Pak 38, are in the overall dimensions.

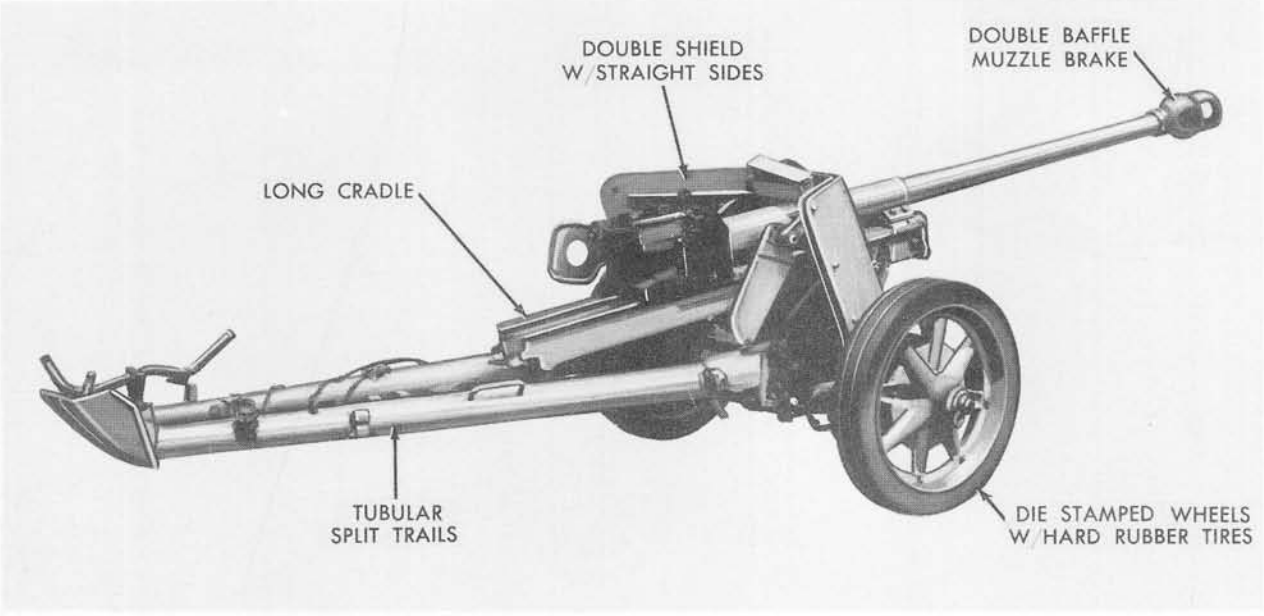
Gun	75-mm Pak 40	50-mm Pak 38
Overall length	20 ft. 4 in.	15 ft. 7 in.
Overall height	4 ft. 1 in.	3 ft. 8 in.
Overall width	6 ft. 10 in.	6 ft.

This piece is still in service or held in reserve in Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, and Rumania.

[redacted]

75-mm Antitank Gun M40

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	1,425 kg (3,031 lbs)
In traveling position	1,500 kg (3,307 lbs)
Length of tube (calibers):	
With muzzle brake	49.3
Elevation limits	−107 to +392 mils (−6° to +22°)
Total traverse	1,157 mils (65°)

II. AMMUNITION (main types and projectile weight):

HE	5.74 kg (12.65 lbs)
AP	6.8 kg (15 lbs)
HVAP	4.1 kg (9.04 lbs)

III. PERFORMANCE:

Maximum horizontal range (w/HE)	8,100 m (8,861 yds)

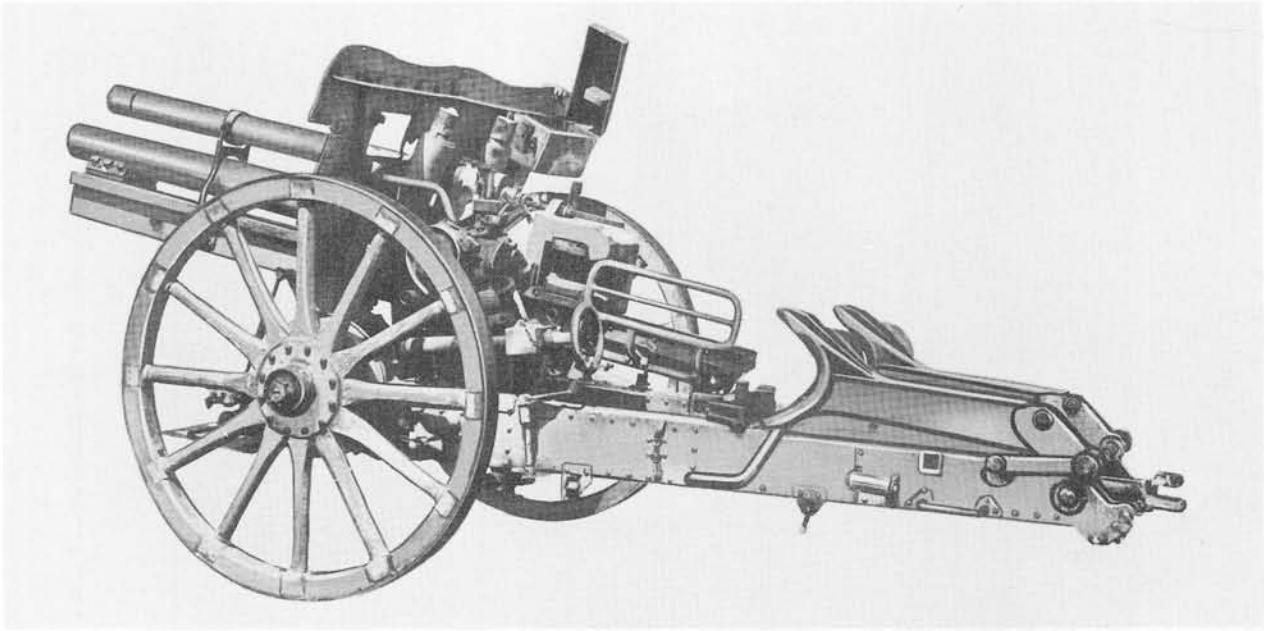
III. PERFORMANCE—Continued

Muzzle velocity:	
HE	550 m/s (1,804 fps)
AP	750 m/s (2,461 fps)
HVAP	930 m/s (3,051 fps)
Rate of fire	12–15 rpm
Armor penetration:	

Round	Angle of attack	Range	
		100 m (109 yds)	1,000 m (1,094 yds)
AP	30°	98-mm (3.86 in.)	82-mm (3.23 in.)
HVAP	30°	126-mm (4.96 in.)	87-mm (3.43 in.)

75-mm Light Field Gun M18

(7.5 cm Leichtes Feld Kanone 18 (7.5 cm Le. F. K. 18))



This gun was developed during the period 1930–31 before the light howitzer had replaced the light field gun in the armies of most major powers. Both Krupp and Rheinmetall produced prototype models with that of the former company being adopted for production in 1938. This was a light cavalry weapon which was replaced by the 7.5 cm Le. F. K. 38, which in turn gave way to the 105-mm Le. F. H. 18 howitzer as the standard German Divisional field artillery piece.

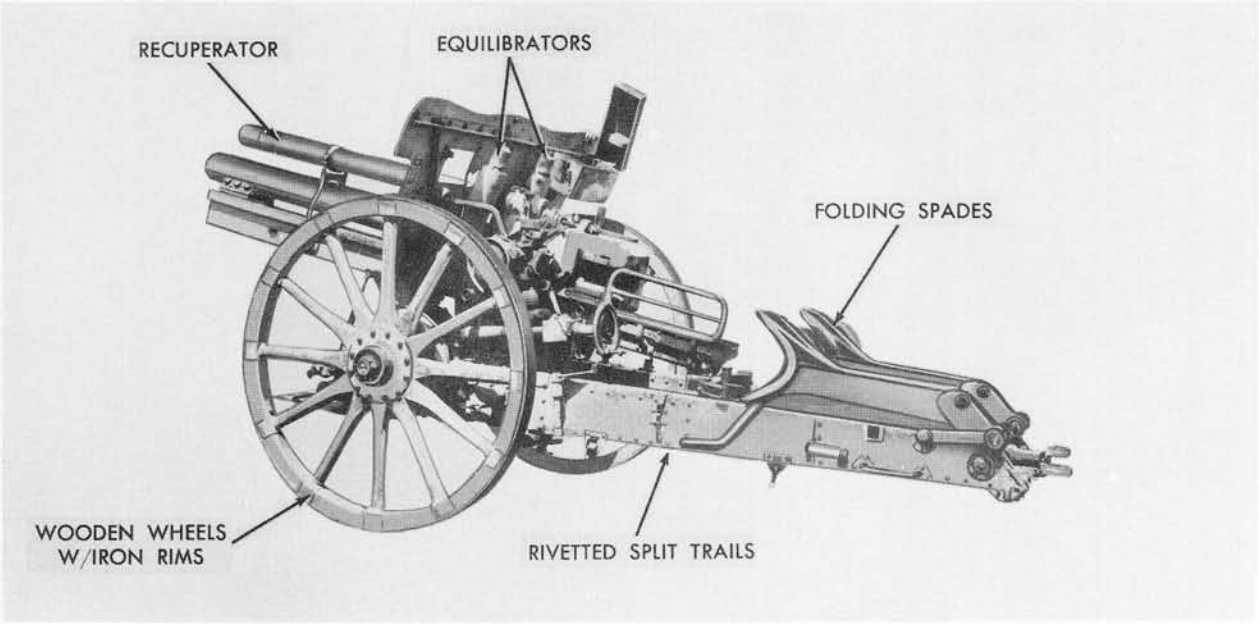
The carriage is of the split trail type with folding spades. The spring carriage suspension is automatically locked when the trail legs are opened out to the firing position. Wooden artillery wheels are fitted.

The gun employes a hydraulic recoil system and a hydropneumatic type recuperator. The former is housed within the cradle below the gun tube, while the latter is supported above the tube. Spring equilibrators are used.

There are believed to be some held in reserve stocks in Bulgaria and Czechoslovakia.

75-mm Light Field Gun M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	1,120 kg (2,469 lbs)
In traveling position	2,010 kg (4,430 lbs)
Length of tube (calibers):	
Without muzzle brake	26
With muzzle brake	Not applicable
Elevation limits	−89 to +801 mils (−5° to +45°)
Total traverse	1,068 mils (60°)

II. AMMUNITION (main types and projectile weight):

HE	5 kg (11.02 lbs)
AP	6.8 kg (14.99 lbs)
HEAT	5.83 kg (12.9 lbs)

III. PERFORMANCE:

Maximum horizontal range	9,425 m (10,311 yds)

III. PERFORMANCE—Continued

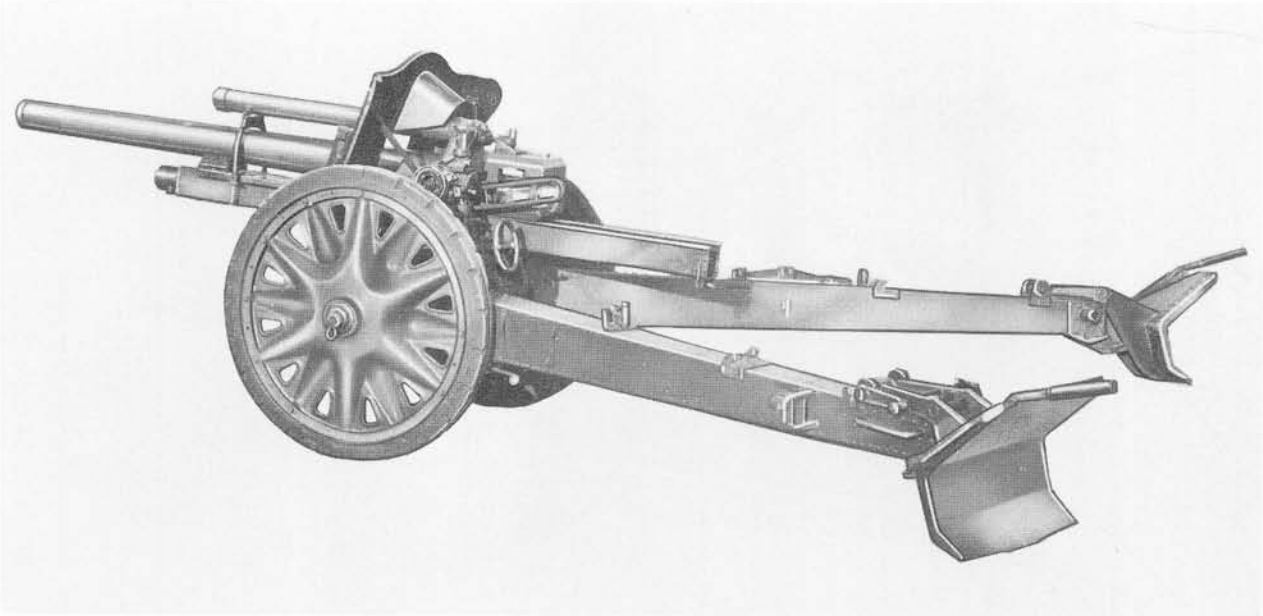
Muzzle velocity:	
HE	485 m/s (1,591 fps)
AP-T	444 m/s (1,457 fps)
HEAT	440 m/s (1,444 fps)
Rate of fire	8–10 rpm

Armor penetration:

Round	Angle of attack	Range		
		100-mm (109 yds)	1000-mm (1,094 yds)	Any
AP-T	30°	45-mm (1.85 in.)	38-mm (1.5 in.)	----------
HEAT	30°	----------	----------	90-mm (3.54 in.)

105-mm Light Field Howitzer M18

(10.5 cm Leichte Feldhaubitze 18 (10.5 cm Le. F. H. 18))



This weapon was designed by Rheinmetall Borsig and introduced into service in the German Army in 1936. It became the standard field howitzer of the German divisional artillery and remained so, being supplemented by the later, models 18 (M) and 18/40. It is easy to maneuver, both in firing and traveling, and has a very stable carriage. It operates smoothly and can be easily laid on tanks or other moving targets.

The gun is mounted on a split train carriage with box section riveted trail legs and folding spades. Wooden-spoked, steel-tired artillery wheels for the horse-drawn version, or die-cast alloy wheels with solid rubber tires for the motorized version, are used and the axle is equipped with transverse springs. A single hydropneumatic equilibrator is fitted between the saddle and cradle.

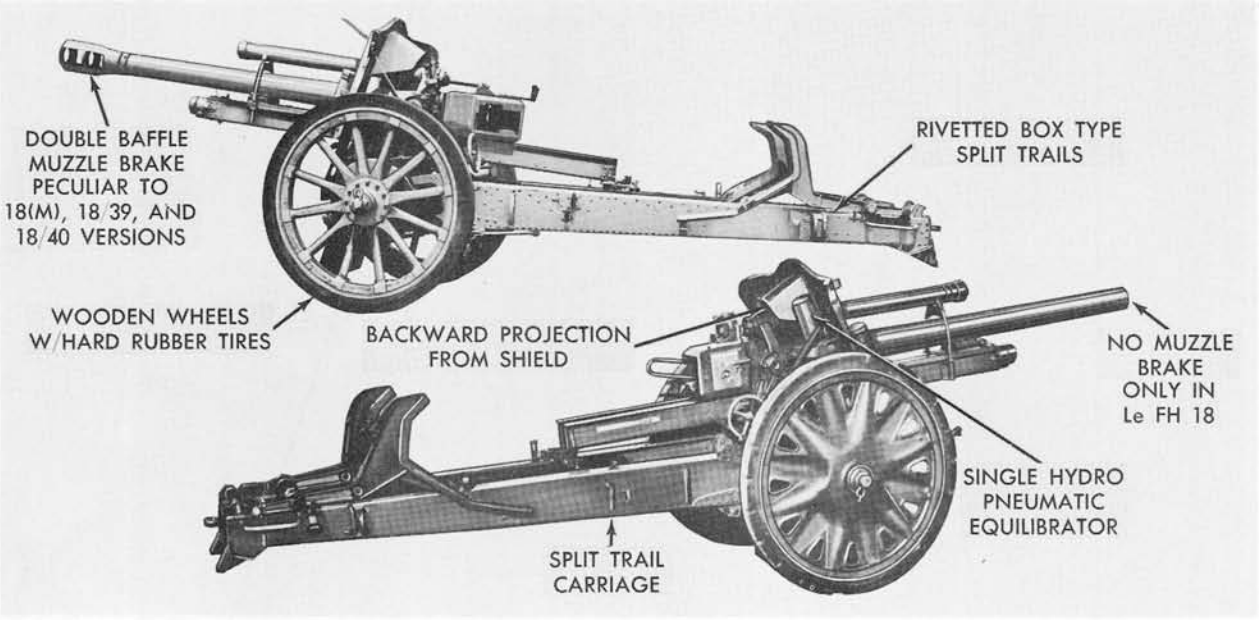
Three other models of this weapon were manufactured; the Le. F. H. 18 (M) which has a muzzle brake and an adjusted recoil system for increased range, and the 18/39 and the 18/40, both having muzzle brakes and being ballistically identical with the 18 (M). The model 18/40 uses the carriage of the 75-mm Pak 40 AT gun, and has both elevating and traversing handwheels on the left side of the carriage.

It is still in service or held in reserve in Albania, Bulgaria, Czechoslovakia, East Germany, and Hungary. In addition, it is present in limited quantities in France, Spain, Yugoslavia, Turkey, and Norway.

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105-mm Light Field Howitzer M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	105-mm (4.13 in.)
Weight:	
In firing position	2,065 kg (4,552 lbs)
In traveling position	2,065 kg (4,552 lbs)
Length of tube (calibers):	
Without muzzle brake	26
Elevation limits	−90 to +750 mils (−5° to +42°)
Total traverse	996 mils (56°)

II. AMMUNITION (main types and projectile weight):

HE	14.81 kg. (32.65 lbs)
HEAT	11.6 kg (25.57 lbs)
AP	15.7 kg (34.61 lbs)

III. PERFORMANCE:

Maximum horizontal range	10,675 m (11,674 yds)*
Muzzle velocity (max.) HE	470 m/s (1,542 fps)*
Rate of fire	4–6 rpm

III. PERFORMANCE—Continued

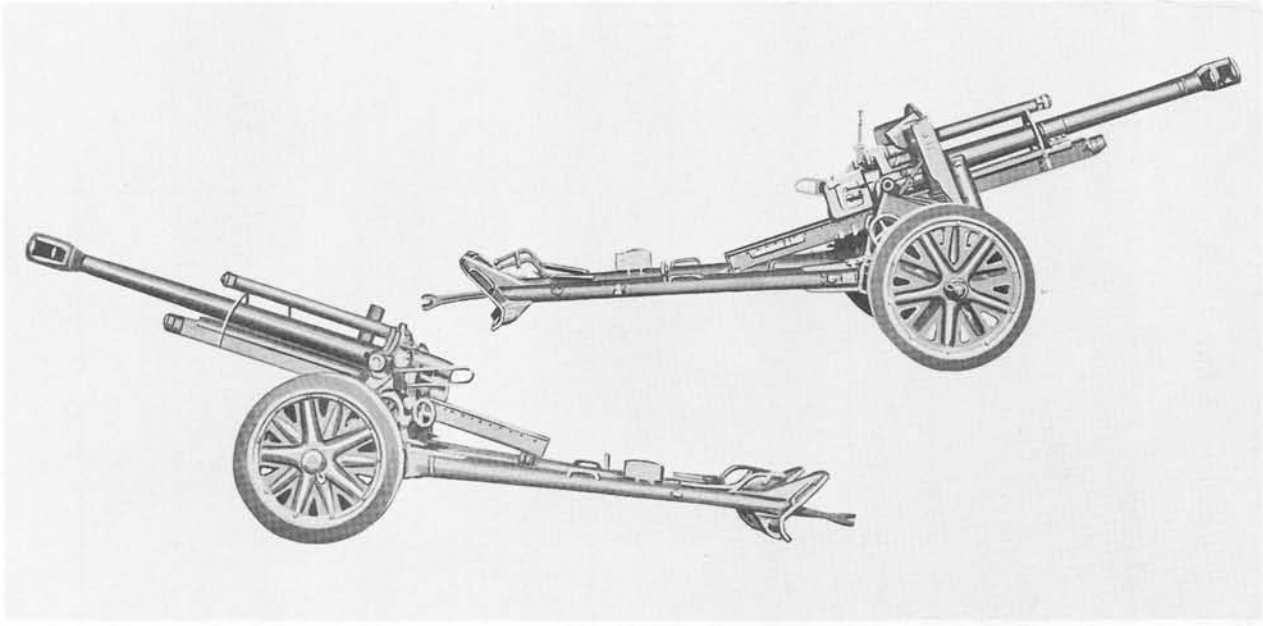
Armor penetration:

Round	Angle of attack	Range		Any
		100 m (109 yds)	1,500 m (1,640 yds)	
AP	30°	6.4-mm (2.52 in.)	49-mm (1.93 in.)	
HEAT	30°			100-mm (3.94 in.)

*The Le.F.H. 18 (M), 18/39, and 18/40 versions all have a maximum range of 12,325 m (13,484 yds) and a maximum muzzle velocity of 540 m/s (1,772 fps).

105-mm Light Field Howitzer M18/40

(10.5 cm Leichte Feldhaubitze 18/40 (10.5 cm Le. F. H. 18/40))



The 105-mm Model 18/40 is an extensively modified version of the Models 18 and 18 (M) howitzers. It was produced to meet the demand for an equipment lighter in weight than its two predecessors, but of equal ballistic performance to the Model 18 (M). The gun was mounted on the carriage of the 7.5 cm Pak 40 antitank gun because that carriage was then in mass production and required a minimum amount of modification to adapt it for use with the howitzer.

Three important features were incorporated in this model:

a. The carriage incorporated torsion bar suspension with the two torsion bars extending for the full width of the carriage body. The torsion bars are locked when the equipment is in action, the movement of the opening of the trail legs effecting the locking.

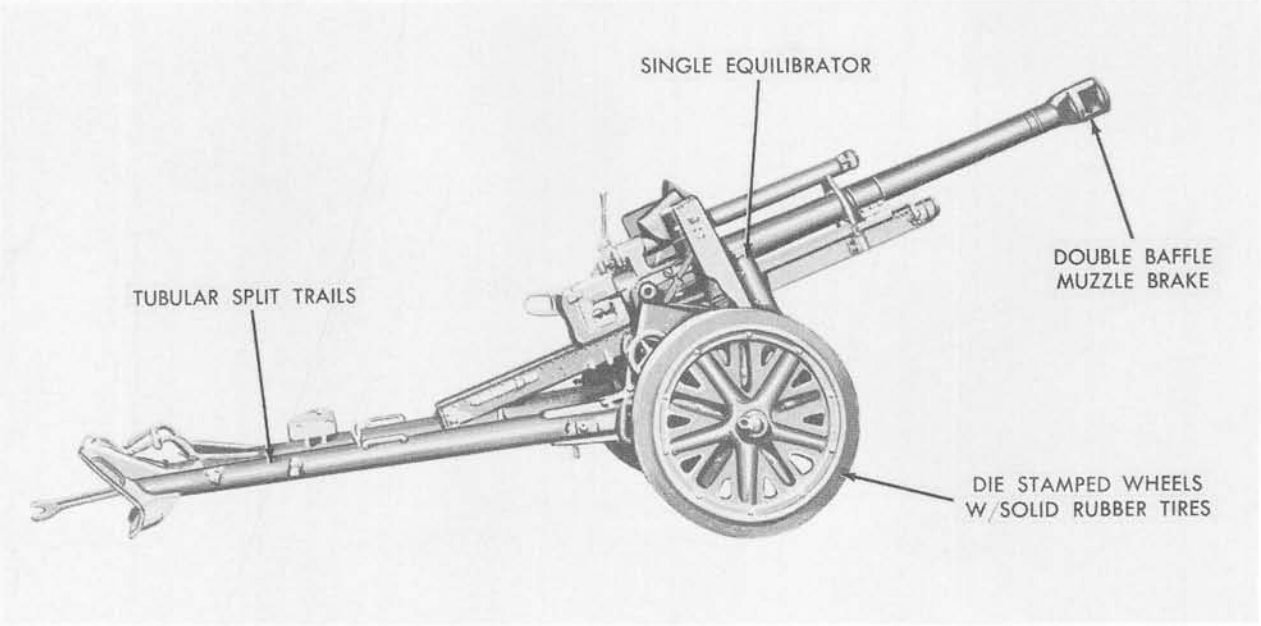
b. Both elevating and traversing handwheels are on the left side of the carriage, so that the layer can both elevate and traverse the gun and fire it.

c. A more efficient muzzle brake was fitted. This was effected by welding projecting wings on the muzzle brake of the Le. F. H. 18 (M).

This howitzer is still in service in several European countries including Czechoslovakia and Yugoslavia.

105-mm Light Field Howitzer M18/40

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	105-mm (4.13 in.)
Weight:	
In firing position	1,900 kg (4,189 lbs)
In traveling position	2,901 kg (6,390 lbs)
Length of tube (calibers):	
Without muzzle brake	28
With muzzle brake	Not applicable
Elevation limits	−89 to +748 mils (−5° to +42°)
Total traverse	1,068 mils (60°)

II. AMMUNITION (main types and projectile weight):

HE	14.8 kg (32.7 lbs)
HEAT	11.6 kg (25.57 lbs)

III. PERFORMANCE:

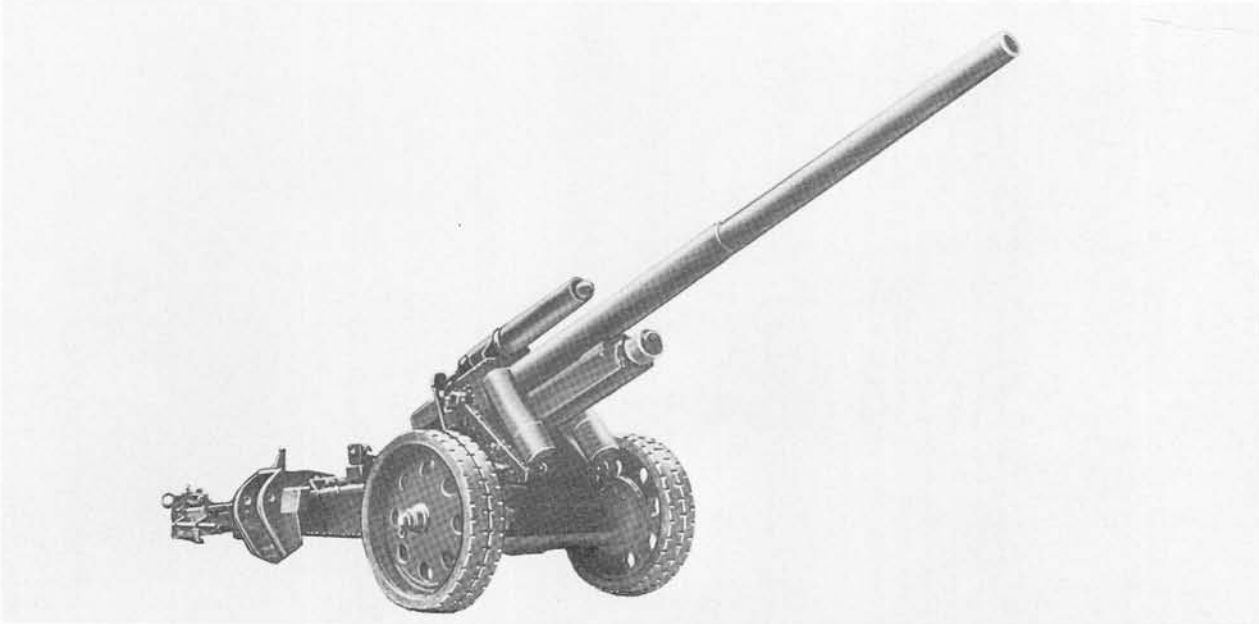
Maximum horizontal range	12,330 m (13,484 yds)
Muzzle velocity, HE	539 m/s (1,772 fps)
Rate of fire	6–8 rpm

Armor penetration:

Round	Angle of attack	Range	Penetration
HEAT	30°	(Independent of range)	100-mm (3.94 in.)

105-mm Medium Field Gun M18

(10.5 cm Schwere Kanone 18 (10.5 cm s. K. 18))



This gun was used in the German Army during the early part of World War II as a companion piece to the 150-mm s. F. H. 18 howitzer. It was also employed as a mobile coastal gun. It is believed that the German Army considered that this equipment was unsatisfactory on account of the comparatively light shell fired for the weight of the gun. It is known that it was little used during the latter half of World War II.

A winch-operated drum, the surface of which was grooved to take a wire hawser, was fitted to the carriage to facilitate the movement of the tube from the traveling to the firing position and vice versa.

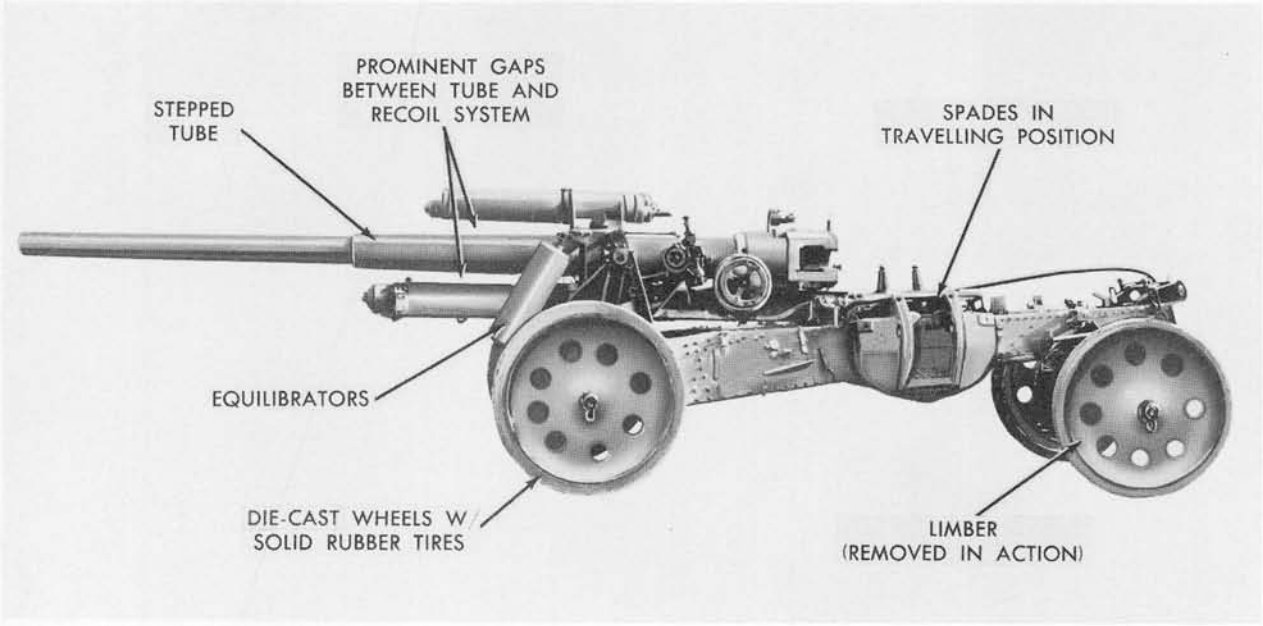
The split trail carriage has riveted trail legs and detachable spades. The axle has transverse leaf type springing which is locked when the equipment is in the firing position. The perforated disc wheels of light metal are fitted with solid rubber tires.

The gun consists of a jacket and tube construction with breech ring and hand-operated horizontal sliding breech block which is fitted for percussion firing. The hydraulic recoil system and cooling jacket is in the cradle below the tube and a hydropneumatic recuperator is located above the tube.

It is held in Czechoslovakian and Albanian Army reserve stocks.

105-mm Medium Field Gun M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	104.9-mm (4.13 in.)
Weight:	
In firing position	5,647 kg (12,438 lbs)
In traveling position	6,440 kg (14,184 lbs)
Length of tube (calibers):	
Without muzzle brake	50
Elevation limits:	
Trails open	801 mils (0° to 45°)
Trails closed	267 mils (15°)
Total traverse:	
Trails open	1,066 mils (60°)
Trails closed	107 mils (6°)

II. AMMUNITION (main types and projectile weight):

HE	15.2 kg (33.38 lbs)
AP	15.6 kg (34.3 lbs)

III. PERFORMANCE:

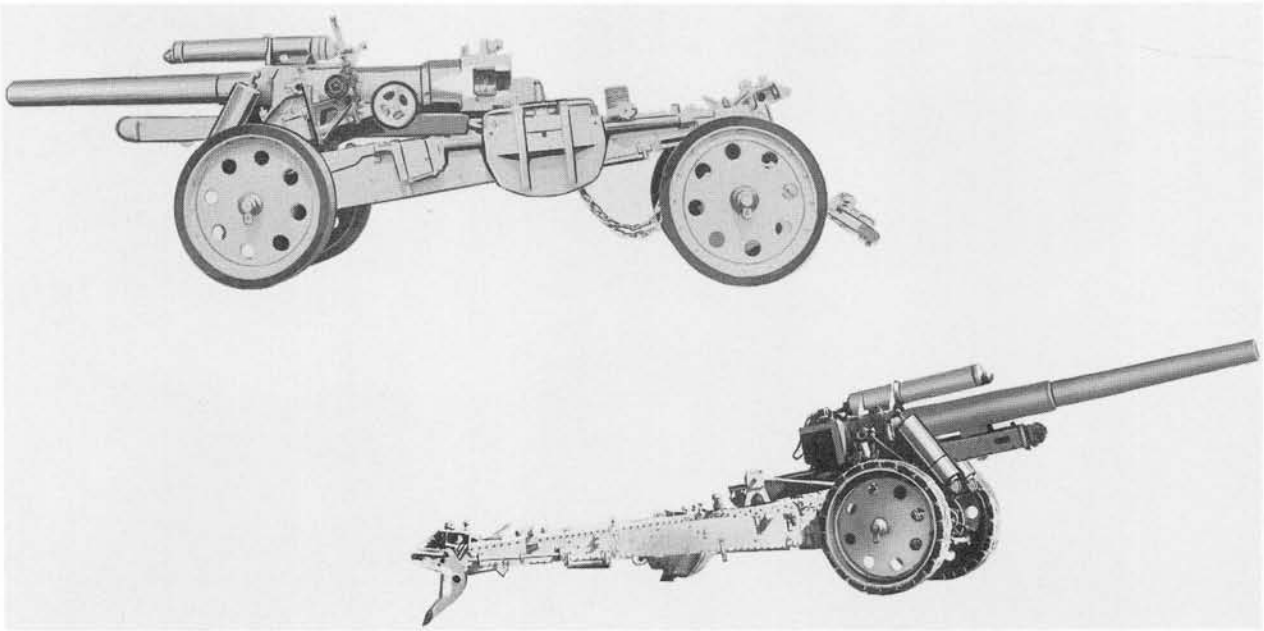
Maximum horizontal range	19,075 m (20,868 yds)
Muzzle velocity (HE, Max)	835 m/s (2,740 fps)
Rate of fire	4–6 rpm

Armor penetration:

Round	Angle of attack	Range	
		100 m (109 yds)	1,500 m (1,640 yds)
AP (Charge 2)	30°	123-mm (4.84 in.)	100-mm (3.94 in.)
AP (Charge 3)	30°	172-mm (6.77 in.)	138-mm (5.43 in.)

150-mm Medium Field Howitzer M18

(15 cm Schwere Feldhaubitz 18 (15 cm s. F. H. 18))



This medium howitzer, together with the 170-mm medium gun M18, formed the backbone of the German medium artillery during World War II. Developed by Krupp and Rheinmetall during the period 1926–1939, it was introduced into service about 1933, and consisted of a Rheinmetall gun on a Krupp carriage. The same basic carriage is used by both the 105-mm gun M18 and the 150-mm howitzer M18. It was manufactured in Germany and from 1939–1945, in Czechoslovakia.

The weapon is of a jacket and tube construction with a detachable breech ring and hand-operated, horizontal sliding breech block designed for percussion firing. A hydraulic recoil cylinder with cooling jacket is in the cradle below the tube and a hydropneumatic recuperator is above the tube.

The split trail field carriage has riveted trail legs and detachable spades. The axle has transverse leaf type suspension which is locked when in firing position. Perforated disc wheels of light metal are fitted with either solid rubber tires, or iron, for motor or animal traction, respectively.

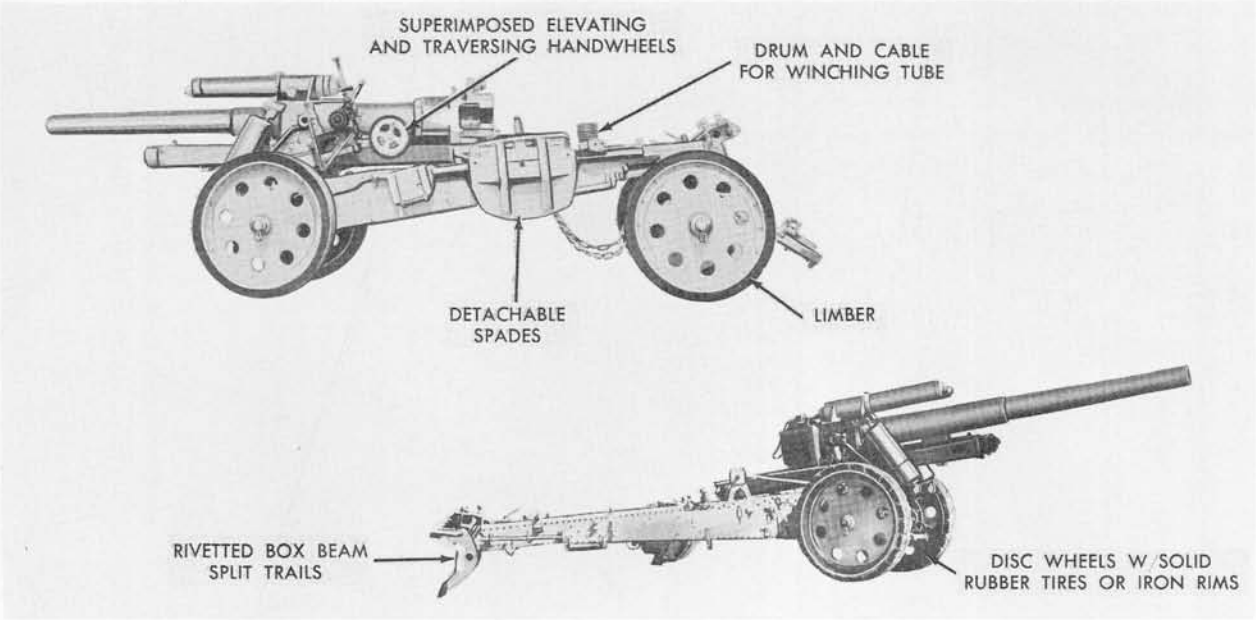
As early as 1938 the German High Command asked for an increased ballistic performance and ability to fire in the upper register but new models were not manufactured because it was found impracticable to change production when increased production of the standard light and medium howitzers was the most important consideration.

This howitzer is still in service or held in reserve in Albania and East Germany. It is also still in service in the Czechoslovak Army, but in that army has been rebored to 152 mm and a shield and double-baffle muzzle brake added. These howitzers are known as the 152-mm Howitzer Model 18/46 in the Czechoslovak Army.

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150-mm Medium Field Howitzer M18

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	150-mm (5.9 in.)
Weight:	
In firing position	5,512 kg (12,152 lbs)
In traveling position	6,304 kg (13,898 lbs)
Length of tube (calibers):	
Without muzzle brake	26.7
With muzzle brake	Not applicable
Elevation limits	0 to +800 mils (0° to +45°)
Total traverse	1,068 mils (60°)

II. AMMUNITION (main types and projectile weight):

HE	43.5 kg (95.9 lbs)
HEAT	25 kg (55.12 lbs)

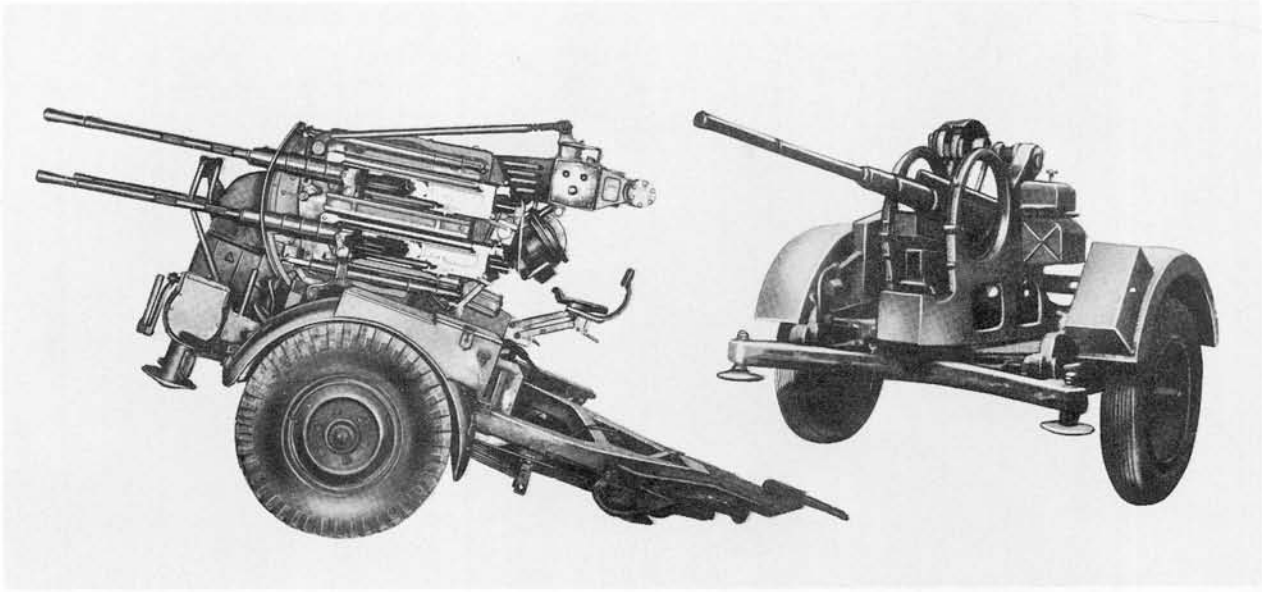
III. PERFORMANCE:

Maximum horizontal range	13,325 m (14,578 yds)
Muzzle velocity (max)	HE—520 m/s (1,706 fps)
	HEAT—465 m/s (1,526 fps)
Rate of fire	4 rpm
Armor penetration:	

Round	Angle of attack	Range	Penetration
AP	30°	1,000-m (1,094 yds)	126-mm (4.96 in.)
HEAT	30°	Any	160-mm (6.3 in.)

20-mm Antiaircraft Gun M38 and M38 Quad Mount

(2 cm Flugabwehr Kanone 38 u. 2 cm Flakvierling 38 (2 cm Flak 38 u. Flak 38V))



This World War II light automatic AA gun is an improved version of the 2 cm Flak 30. Its ballistic performance is the same as the latter weapon but the rate of fire was increased. The carriage was also redesigned and double ringed trunnions were introduced to give greater stability in action. The original sight used with this equipment was the Flakvisier 38, which consisted of an electric computer box and a reflector type sighting head. Although this sight was efficient, it was difficult to produce and maintain, In 1941 a simple speed ring sight was adopted for alternate use with all 20-mm equipment.

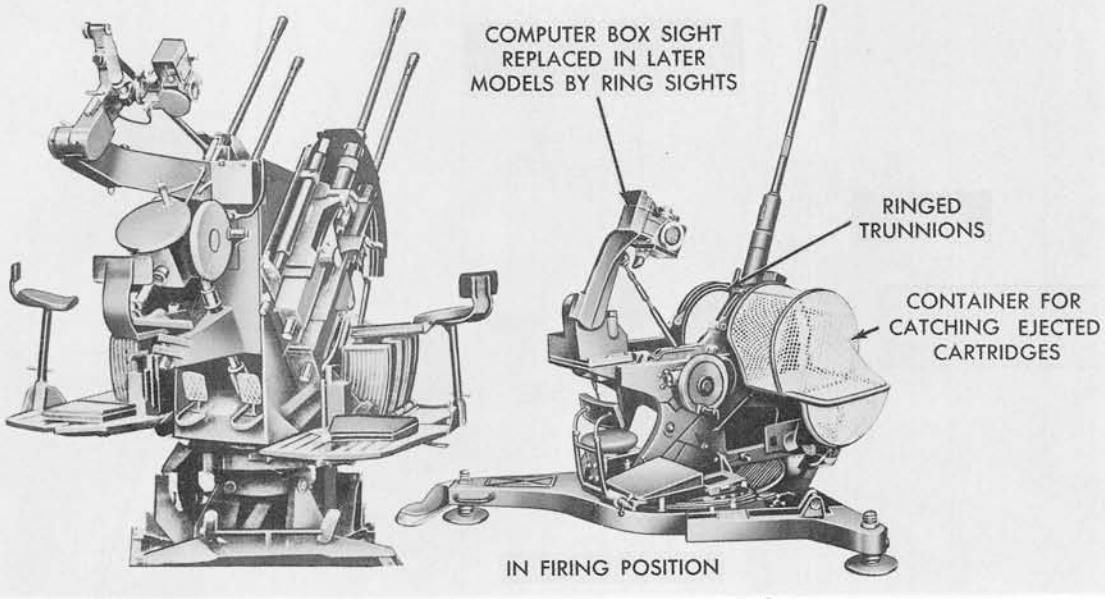
In addition to the 20-mm Flak 38 a quadruple version of this gun was also brought into service at about the same time as the single-mount gun. The quadruple version was designated "2 cm Flakvierling 38." A mountain version of this gun on a light-weight carriage was produced during World War II. It was termed the 2 cm Gebirgsflak 38 (2 cm Geb Flak 38).

Albania, Rumania, East Germany, and Yugoslavia are reported as still using these guns.

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20-mm Antiaircraft Gun M38 and M38 Quad Mount

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	20-mm (.79 in.)
Weight:	
In traveling position	2,379 kg (5,245 lbs) Flak 38 V 740 kg (1,630 lbs) Flak 38
In firing position	450 kg (992 lbs) Flak 38 1,509 kg (3,327 lbs) Flak 38 V
Length of tube (caliber):	
Without flash hider	65
Elevation limits	(−20° to +90°)
Total traverse	6,400 mils (360°)

II. AMMUNITION (main types and projectile weights):

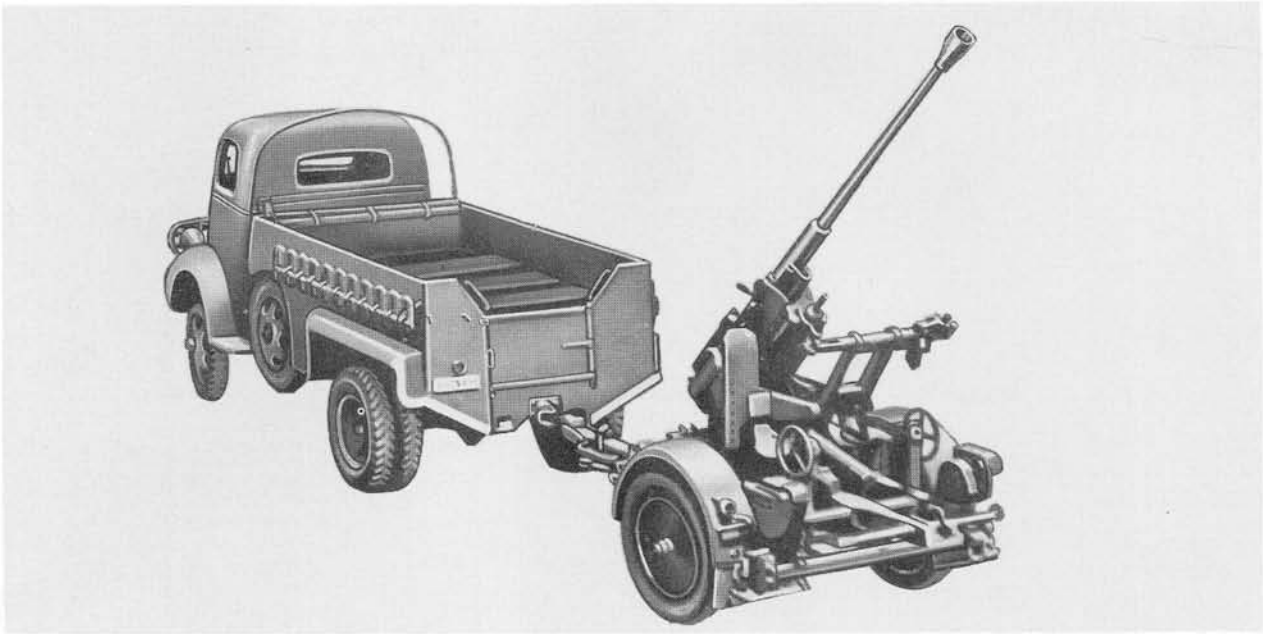
HE-T	119 gm (4.2 oz)
HEI-T	119 gm (4.2 oz)
AP-T	147 gm (5.2 oz)

III. PERFORMANCE:

Maximum horizontal range	4,800 m (5,250 yds)
Maximum vertical range	3,700 m (12,200 ft)
Range to self-destruction	2,195 m (7,200 ft)
Muzzle velocity:	
HE-T	900 m/s (2,950 fps)
HEI-T	900 m/s (2,950 fps)
AP-T	800 m/s 2,625 fps)
Rate of fire:	
Practical	180-220 rpm (Flak 38) 720-800 rpm (Flak 38 V)

37-mm Antiaircraft Guns M36 and M37

(3.7cm Flugabwehr Kanone 36 u. 37 (3.7cm Flak 36 u. Flak 37))

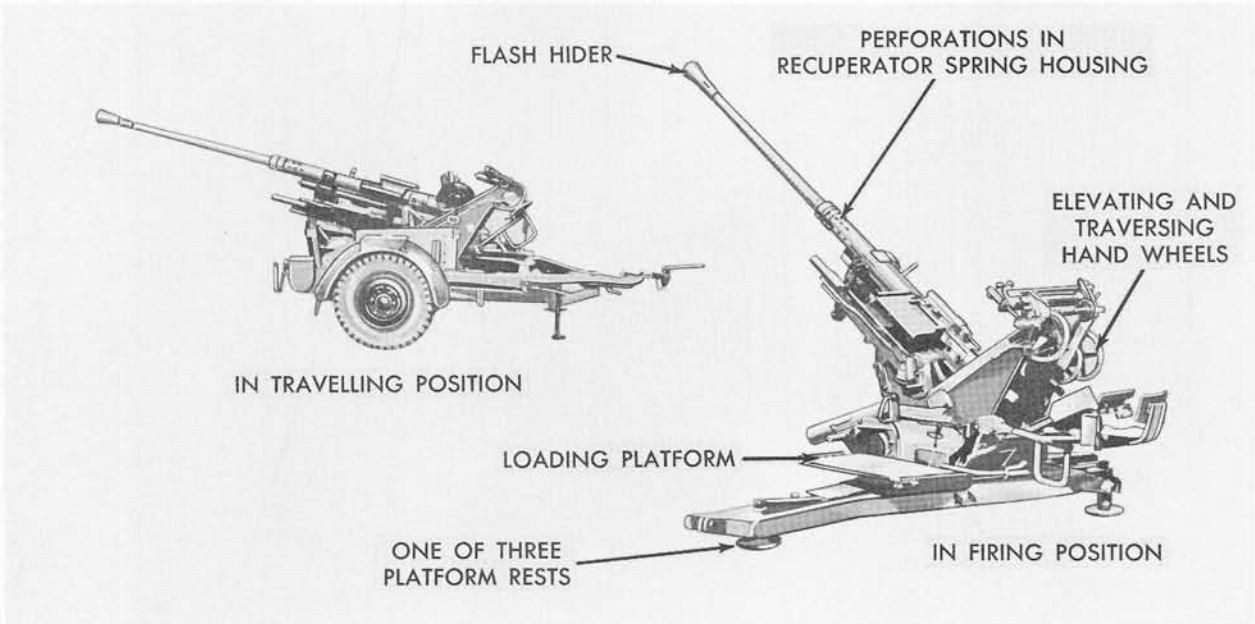


The 37-mm AA guns, Models 36 and 37 have the same ballistic performance since they use the same tube and ammunition. An earlier model, the Flak 18, was mounted on a cruciform platform and transported on two single-axle bogies. After extensive tests under operational conditions it was decided that the Flak 18 was not sufficiently maneuverable and a new carriage was designed for transport on a single-axle carriage. The new equipment was designated Flak 36. The Flak 36 was in service at the outbreak of the war and was the standard 37-mm AA automatic weapon. Late in 1940 the tube was modified by a slight shortening of the chamber. This modification did not occasion any change in nomenclature of the equipment but such equipments had V (verkurzt) stamped on the rear of the tube to indicate that the chamber had been modified. The mechanical computing sight of the Flak 36, still working on the same principle as that of the Flak 18, was modified for mounting on the new carriage and was redesignated Flakvisier 36. A new clockwork tachymetric sight was developed to replace the mechanical computer sight used on the Flak 36. It was intended that this clockwork sight should replace the Flakvisier 36 on the Flak 36, but the modifications necessary were rather extensive and equipments with the new sighting arrangements were redesignated Flak 37.

The new sight was designated the Flakvisier 37. Only a limited number of converted Flak 36 equipments were completed, as the clockwork sight was also employed with a later model of the 37-mm antiaircraft gun, and this absorbed most of the models produced. Various models of the 37-mm AA gun are still reported in use in Bulgaria, Czechoslovakia, Rumania, and Albania.

37-mm Antiaircraft Guns M36 and M37

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	37-mm (1.46 in.)
Weight:	
In firing position	1,544 kg (3,400 lbs)
In traveling position	2,406 kg (5,300 lbs)
Length of barrel (calibers):	
With flash hider	57
Elevation limits	−89 to +1,510 mils (−5° to +85°)
Total traverse	Unlimited

II. AMMUNITION (main types and projectile weight):

HE-T	0.64 kg (1.4 lbs)
AP-T	0.68 kg (1.5 lbs)

III. PERFORMANCE:

Maximum horizontal range (without SD* element).	6,584 m (7,200 yds)
Maximum vertical range (without SD* element).	4,800 m (15,750 ft)

III. PERFORMANCE—Continued

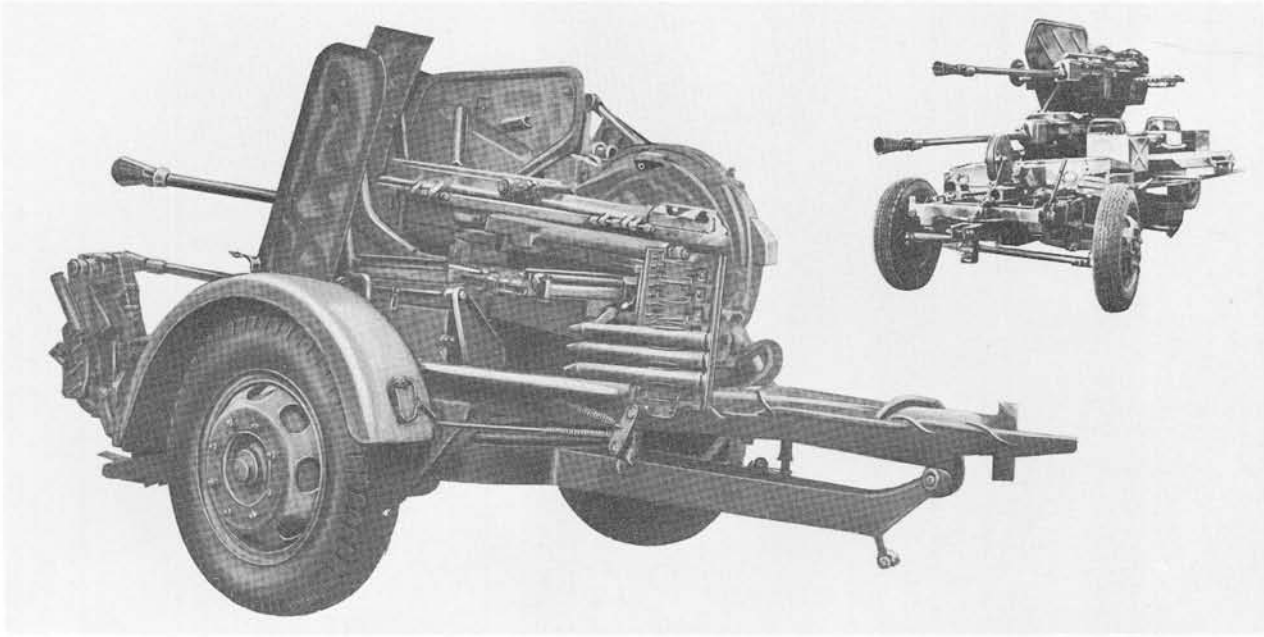
Range to self-destruction	2,740–3,670 m (9,000–11,000 ft)
Muzzle velocity:	
HE-T	820 m/s (2,690 fps)
AP-T	770 m/s (2,525 fps)
Rate of fire:	
Cyclic	160 rpm
Practical	80–100 rpm

Round	Angle of attack	Range	
		100 m (109 yards)	600 m (656 yards)
AP-T	0°	36-mm (1.42 in.)	27-mm (1.06 in.)

*Self-destroying.

37-mm Antiaircraft Gun M43 and M43Z Dual Mount

(3.7 cm Flugabwehr Kanone 43u. Flakzwilling 43 (3.7 cm Flak 43 u. Flakzwilling 43))



The 3.7 cm Flak 43 has the same ballistic performance as the Flak 18, 36, and 37 models, but was completely redesigned in all other major aspects. A gas-operated weapon, this gun had an increased rate of fire, quicker traversing, simplified operation, and greater reliability; overall, this weapon was a great improvement over the earlier models.

The Flak 43 was fitted with a ring trunnion of entirely new design which enabled the ammunition to be fed through the center of the trunnion. The sight employed was an on-carriage clockwork computer which was similar to that used with the Flak 37. It was designated Flakvisier 43 when used with this gun.

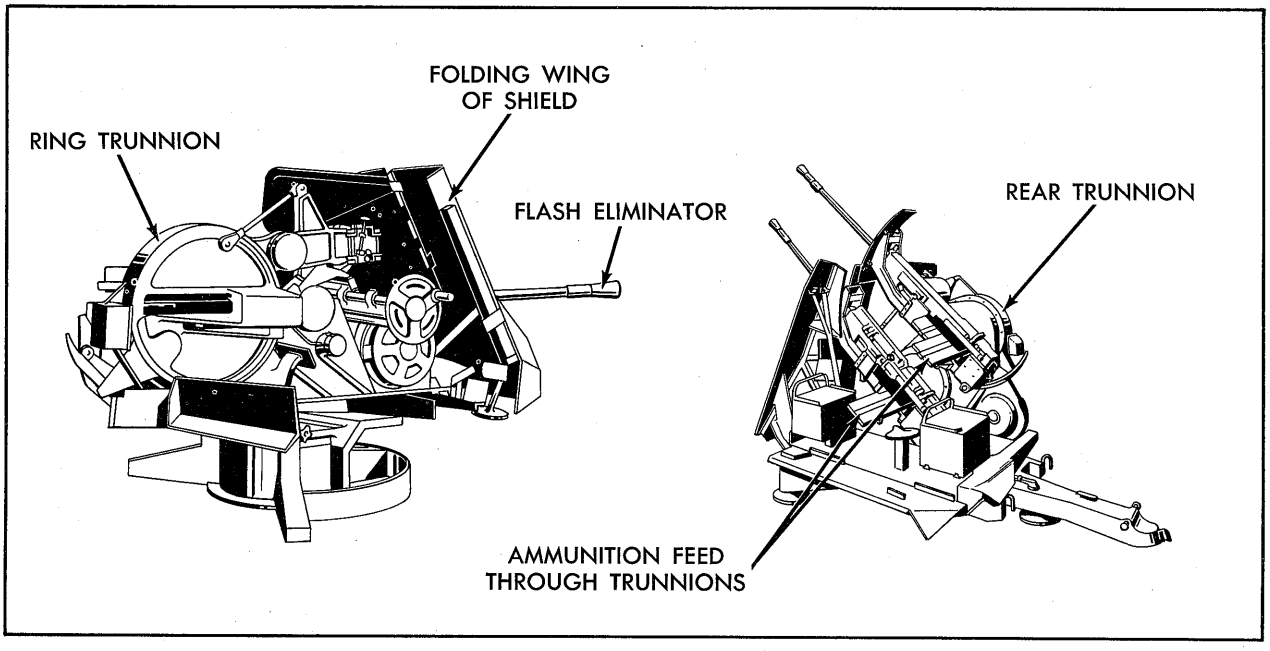
Other interesting features incorporated with this equipment included a clockwork type of spring equilibrators and a device for affecting graduated recoil with varying elevations.

A dual version of this model exists which is designated "3.7 cm Flakzwilling 43 (3.7 cm Flak 43Z)".

Various models of the German 3.7 cm Flak gun are still reported in use by Rumania, Czechoslovakia, Bulgaria, and Albania.

37-mm Antiaircraft Gun M43 and M43Z Dual Mount

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	37-mm (1.46 in.)	
Weight:	*Flakzwilling 43*	*Flak 43*
In firing position	2,783 kg (6,130 lbs)	1,393 kg (3,068 lbs)
In traveling position	4,290 kg (9,459 lbs)	2,059 kg (4,539 lbs)
Length of tube (calibers):		
Without flash hider	57	
Elevation limits	−178 to +1,600 mils (−10° to +90°)	
Total traverse	Unlimited	

II. AMMUNITION (main types and projectile weight):

HE-T*	0.625 kg (1.38 lbs)
AP-T shell M18	0.685 kg (1.51 lbs)
AP-T shell M40	0.405 kg (0.89 lb)

III. PERFORMANCE:

Maximum horizontal range (without SD* element)	6,584 m (7,200 yds)
Maximum vertical range (without SD* element)	4,800 m (15,750 ft)

III. PERFORMANCE—Continued

Range to self-destruction	2,740–3,670 m (9,000–11,000 ft)
Muzzle velocity:	
HE-T	820 m/s (2,690 fps)
AP	770 m/s (2,525 fps)
HVAP	1,150 m/s (3,774 fps)
Rate of fire:	
Cyclic	230–250 rpm
Practical	150 rpm

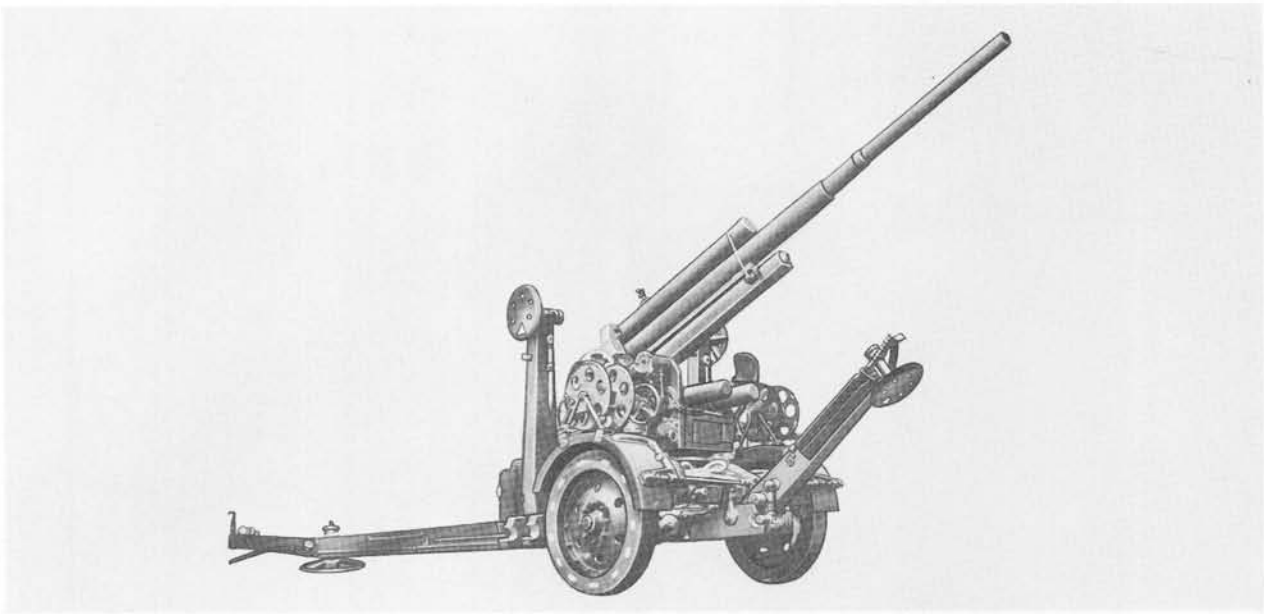
Armor penetration:

Round	Angle of impact	Range	
		100 m (109 yards)	600 m (656 yards)
AP	0°	36-mm (1.42 in.)	27-mm (1.06 in.)

*Self-destroying.

75-mm Antiaircraft Gun M38

(7.5 cm Flugabwehr Kanone 38 (7.5 cm Flak 38))

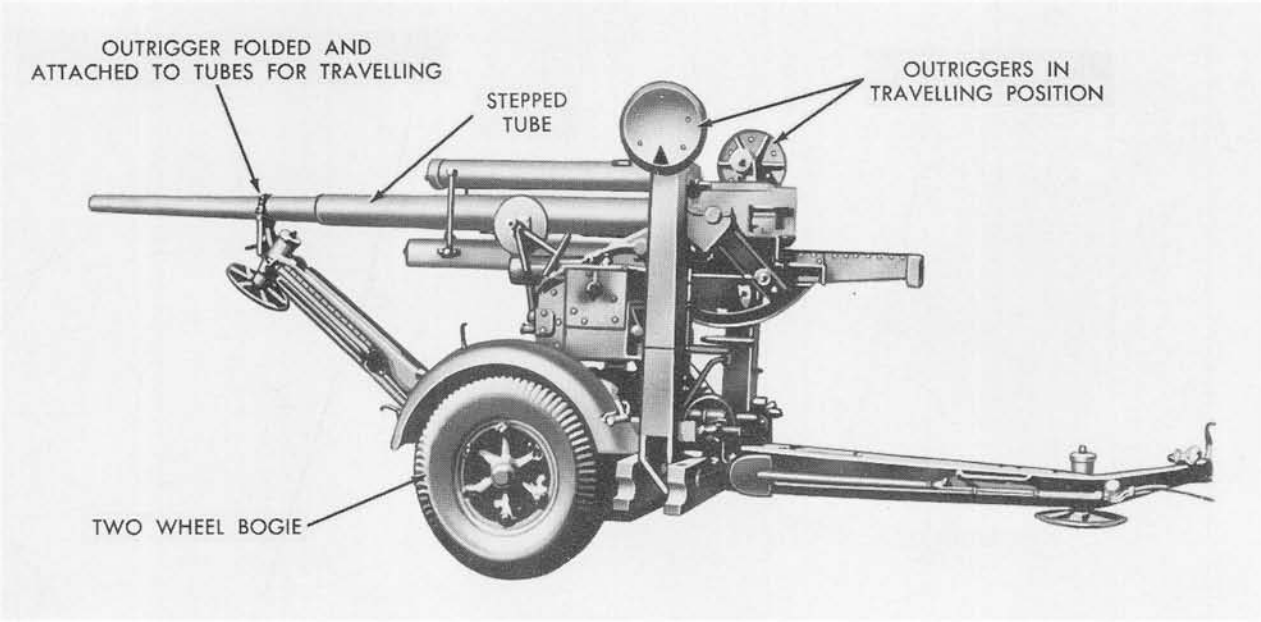


The 7.5 cm Flak 38 is a Krupp gun which was a modification of the 1934 L/59 model. No antiaircraft gun of 7.5 cm caliber was ever standardized in the German service. Guns of this caliber which were in production at the beginning of World War II for oversea sale, or which were captured by the Germans, were taken over by the German Navy for coastal antiaircraft defense. The operational use of this gun in an antiaircraft artillery role in any future war is most improbable. A limited number of these guns are still reported held by Bulgaria.

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75-mm Antiaircraft Gun M38

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In traveling position	5,165 kg (11,375 lbs)
In firing position	3,178 kg (7,000 lbs)
Length of tube (calibers):	
(No muzzle brake)	60
Elevation limits	−89 to +1,510 mils (−5° to +85°)
Total traverse	6,400 mils (360°)

II. AMMUNITION (main types and projectile weights):

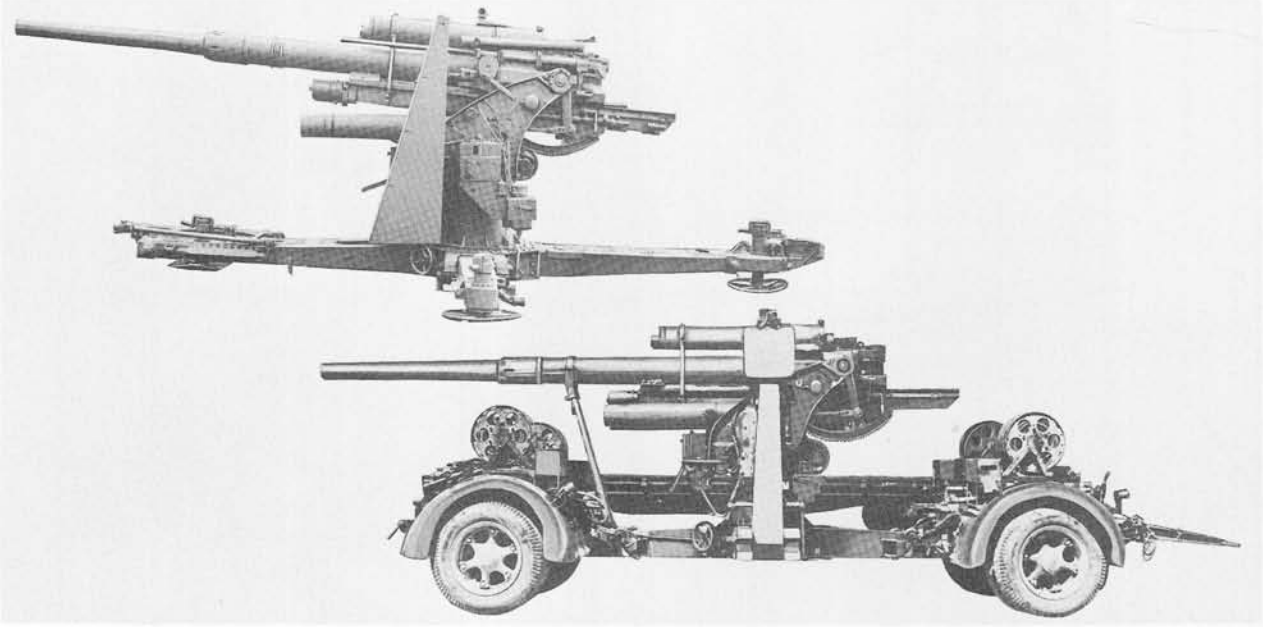
HE	6.5 kg (14.3 lbs)

III. PERFORMANCE:

Maximum horizontal range	15,100 m (16,519 yds)
Maximum vertical range	11,580 m (38,000 ft)
Muzzle velocity (HE)	848 m/s (2,780 fps)
Rate of fire	20 rpm
Armor penetration	No AP round provided

88-mm Antiaircraft Guns, M18, M36, and M37

(8.8 cm Flugabwehr Kanone 18, 36 u. 37(8.8 cm Flak 18, 36 u. 37))



The 88-mm gun, in its various models, was the main German medium caliber antiaircraft gun throughout the war, and, in addition, did yeoman work as an antitank weapon. The Flak 18, 36, and 37 have the same ballistic performance and differ only slightly from each other in appearance.

The Flak 18 is of monobloc tube construction and differs from the later models, which are of the multisection type.

As the result of large-scale experience in service and in the mass production of the equipment, several improvements were decided upon in 1936 and put into production in 1937. These improvements included a new cruciform platform and new bogies, both designed by the firm of Linders. The changes were intended to improve mobility and stability in action and to simplify mass production of the equipment. Concurrently with this development, a new three-section liner was introduced and the whole equipment was then called the 88-mm Flak 36; nevertheless, Flak 18 tubes were often used on Flak 36 carriages and vice versa.

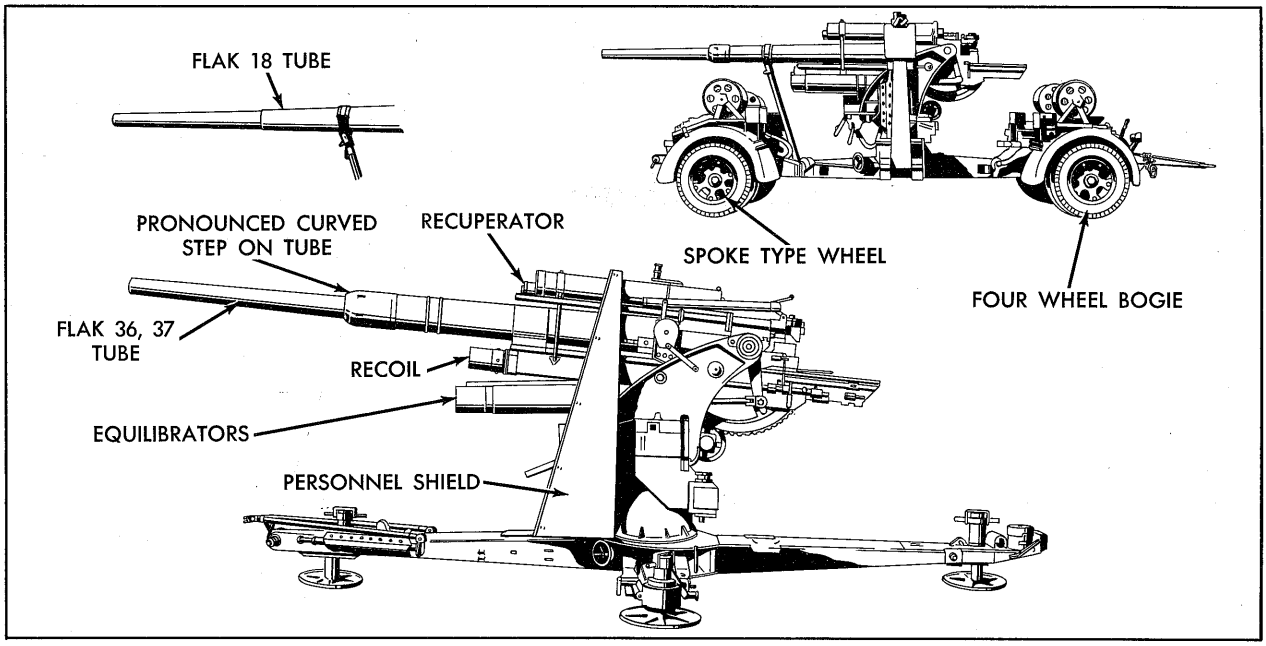
When the "Ubertragung 37" data transmission system was introduced in 1939 for use with the Flak 36, the modified version was called the Flak 37. The "U–37" is a selsyn system of data transmission.

Various models of the 88-mm antiaircraft gun are still to be found in Czechoslovakia, Rumania, East Germany, Albania, Belgium, Norway, Finland, Brazil, and Yugoslavia.

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88-mm Antiaircraft Guns, M18, M36, and M37

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:
- Caliber: 88-mm (3.46 in.)
- Weight:
 - In firing position: 5,004 kg (11,023 lbs)
 - In traveling position:
 - Flak 18: 7,006 kg (15,432 lbs)
 - Flak 36, 37: 8,207 kg (18,078 lbs)
- Length of tube (calibers):
 - (No muzzle brake): 56
- Elevation limits: −53 to +1,513 mils (−3° to +85°)
- Total traverse: 2 x 6,400 mils (2 x 360°)

II. AMMUNITION (main types and projectile weight):
- HE: 9 kg (19.84 lbs)
- AP: 9.51 kg (20.94 lbs)
- HVAP: 7.5 kg (16.53 lbs)

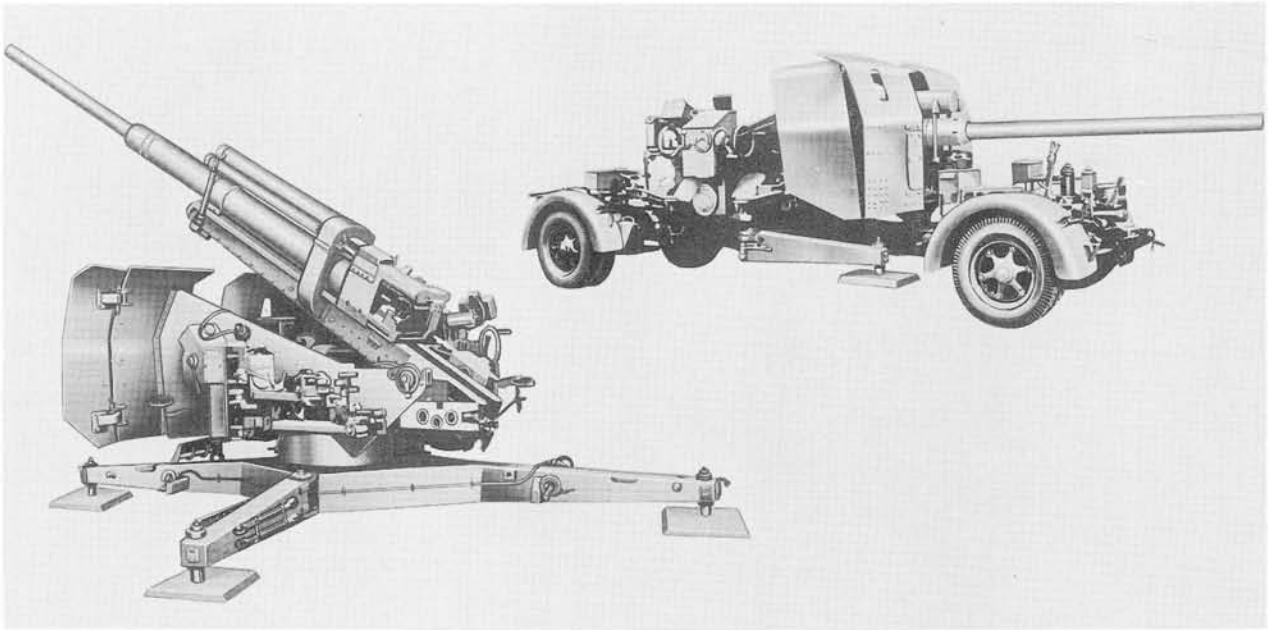
III. PERFORMANCE:
- Maximum horizontal range: 14,860 m (16,257 yds)
- Maximum vertical range: 10,600 m (34,789 ft)

III. PERFORMANCE—Continued
- Muzzle velocity:
 - HE: 820 m/s (2,690 fps)
 - AP: 795 m/s (2,600 fps)
 - HVAP: 930 m/s (3,051 fps)
- Rate of fire: 15–20 rpm
- Amor penetration:

Round	Angle of attack	Range		
		100 m (109 yds)	1,000 m (1,094 yds)	1,500 m (1,640 yds)
AP	30°	165-mm (6.5 in.)	137-mm (5.4 in.)	123-mm (4.8 in.)
HVAP	30°	128-mm (504 in.)	106-mm (4.17 in.)	97-mm (3.82 in.)

88-mm Antiaircraft Gun M41

(8.8 cm Flugabwehr Kanone 41 u. 37/41 (8.8 cm Flak 41 u. 37/41))



During the period 1938–1939 the Germans decided that an 88-mm gun with a much higher performance than that of the Flak 36 and Flak 37 guns was required. The original model was assigned the nomenclature "8.8 cm Gerat 37" but because of confusion with the 8.8 cm Flak 37, the nomenclature was changed to 8.8 cm Flak 41.

Compared with the previous models 18, 36, and 37, the Flak 41 was a much superior weapon. It had a turntable in place of a pedestal, giving it a much lower silhouette; the muzzle velocity was increased by about 600 fps. A power-operated, roller-loading mechanism was fitted.

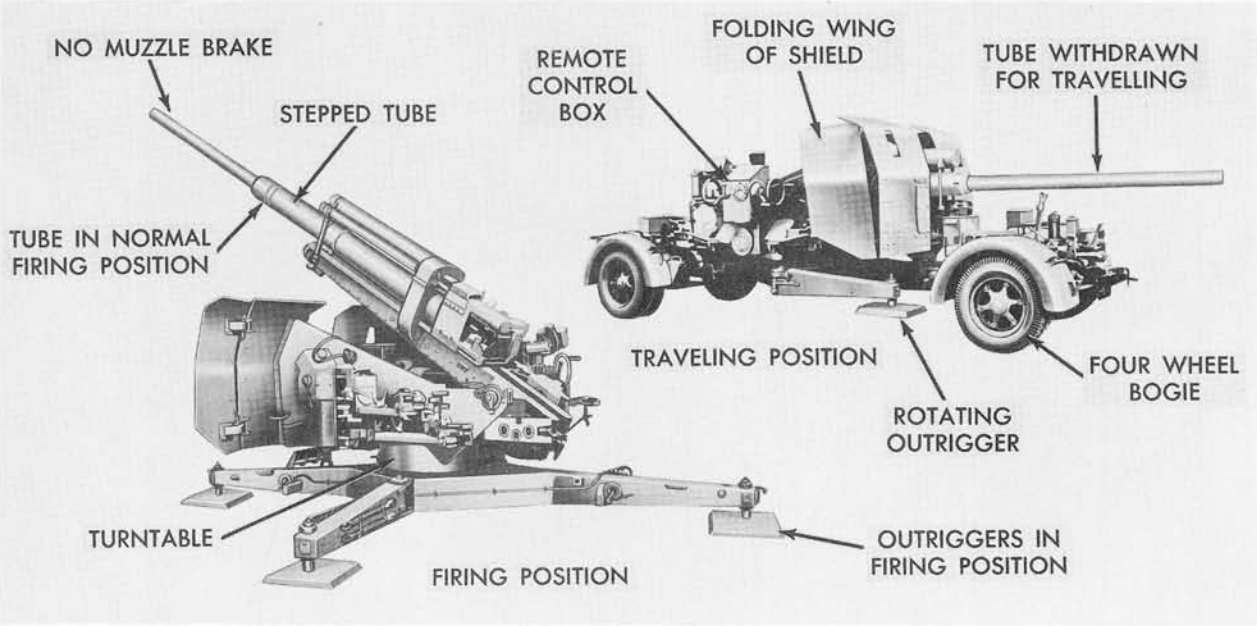
In an effort to bring the performance of Models 18, 36, and 37 into line with the Model 41, the Germans increased the length of the tube and added a muzzle brake to some of these earlier pieces. The equilibrators were strengthened and the same fuze setter and power loader as used on the Flak 41 were added. This modified gun was known as the 8.8 cm Flak 37/41. Considerable difficulty was encountered in this model with the extraction of cartridge cases. It is believed that this design was never cleared for full-scale production.

88-mm AA guns answering this general description, except that the same type of muzzle brake used on the Soviet 85-mm AA gun M1939 is used, are in current service in the Czechoslovak army.

The 88-mm Flak 41 is still in use by Czechoslovakia and may be found in Albania, Bulgaria, East Germany, and Rumania.

88-mm Antiaircraft Gun M41

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	88-mm (3.46 in.)
Weight:	
In firing position	8,000 kg (17,637 lbs)
In traveling position	11,200 kg (24,692 lbs)
Length of tube (calibers):	
Without muzzle brake	74
Elevation limits	−53 to +1,600 mils (−3° to +90°)
Total traverse	Unlimited

II. AMMUNITION (main types and projectile weight):

HE	9.4 kg (20.7 lbs)
AP	10 kg (22.05 lbs)
HVAP	7.5 kg (16.5 lbs)

III. PERFORMANCE:

Maximum horizontal range	20,000 m (21,880 yd)
Maximum vertical range	14,700 m (48,246 ft)

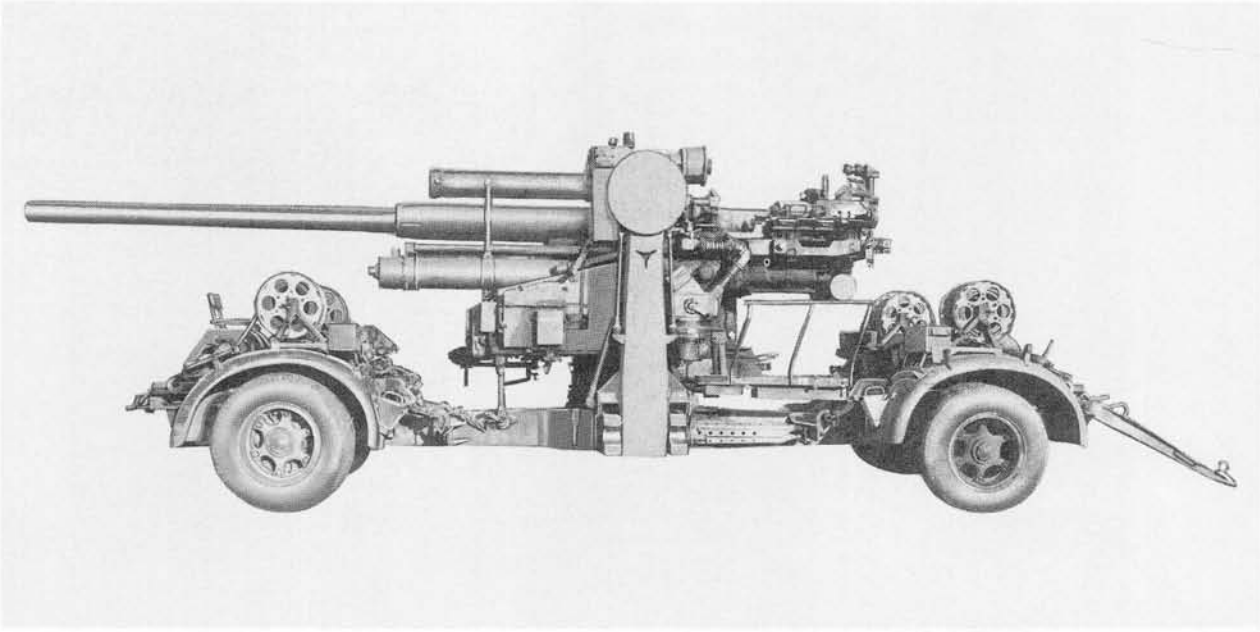
III. PERFORMANCE—Continued

Muzzle velocity:	
HE	1,000 m/s (3,282 fps)
AP	980 m/s (3,216 fps)
HVAP	1,125 m/s (3,692 fps)
Rate of fire	22 to 25 rpm
Armor penetration:	

Round	Angle of attack	Range		
		100 m 109 yds)	500 m 547 yds)	1,500 m (1,641 yds)
AP	30°	199-mm (7.8 in.)	177-mm (6.97 in.)	142-mm (5.6 in.)
HVAP	30°	237-mm (9.3 in.)	216-mm (8.5 in.)	171-mm (6.73 in.)

105-mm Antiaircraft Guns M38 and M39

(10.5 cm Flugabwehr Kanone 38 u. 39 (10.5 cm Flak 38 u. 39)



The development of the 105-mm AA gun M38 was started in 1933 by the firms of Rheinmetall and Krupp in competition with one another. In the design, stability in action was emphasized at the expense of tactical mobility and speed in action. It was produced in both static and mobile versions and during World War II was also mounted on railway cars.

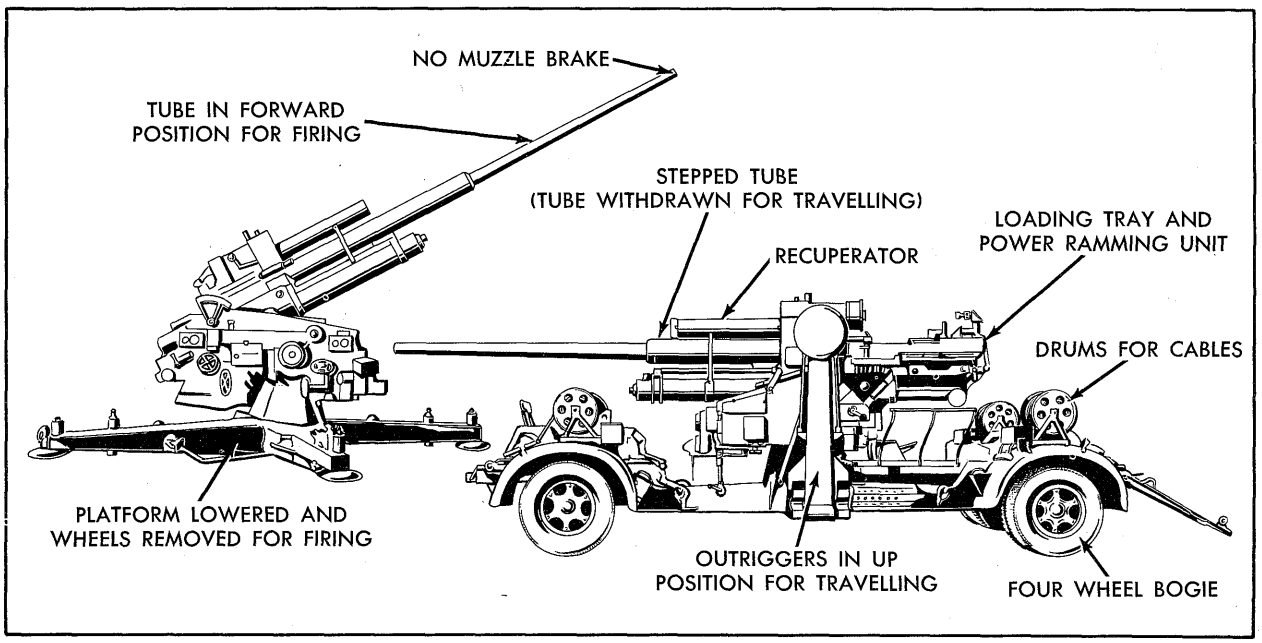
The breech was a horizontal sliding block which may be operated either manually or automatically, and an electric firing mechanism. It has a hydraulic recoil system, a hydropneumatic recuperator, and spring equilibrators. Traverse and elevation may be accomplished either manually or by power. A remote-control, power-operated fuze-setter rammer is part of the complete unit.

Two models of this gun exist, one the model 38, and the other model 39. Both models have the same ballistic performance. The Flak 39 differs from the Flak 38 in the following aspects: The electrical equipment of the Model 39 employs AC current which enables it to operate off public power supply, while the Model 38 uses DC current; the introduction of a new five-piece multisectional tube liner, and the modification of the gun to use a pointer matching data transmission system in place of the system on the Model 38, which used light bulbs to indicate firing data. An unusual feature in the construction of the M 39 is that the traversing rack (normally made of steel) is constructed of fiber laminations bounded under pressure by a resinous material.

This gun is still reported in use by Czechoslovakia.

105-mm Antiaircraft Guns M38 and M39

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	105-mm (4.13 in.)
Weight:	
In firing position	10,240 kg (23,000 lbs)
In traveling position	14,600 kg (32,200 lbs)
Length of tube (caliber):	
(No muzzle brake)	63.3
Elevation limits	−53 to +1,510 mils (−3° to +85°)

II. AMMUNITION (main types and projectile weight):

HE	15 kg (33.1 lbs)
AP	15.6 kg (34.4 lbs)

III. PERFORMANCE:

Maximum horizontal range	17,700 m (19,360 yds)
Maximum vertical range	12,800 m (42,000 ft)
Muzzle velocity:	
HE	880 m/s (2,886 fps)
AP	860 m/s (2,820 fps)
Rate of fire	10–15 rpm

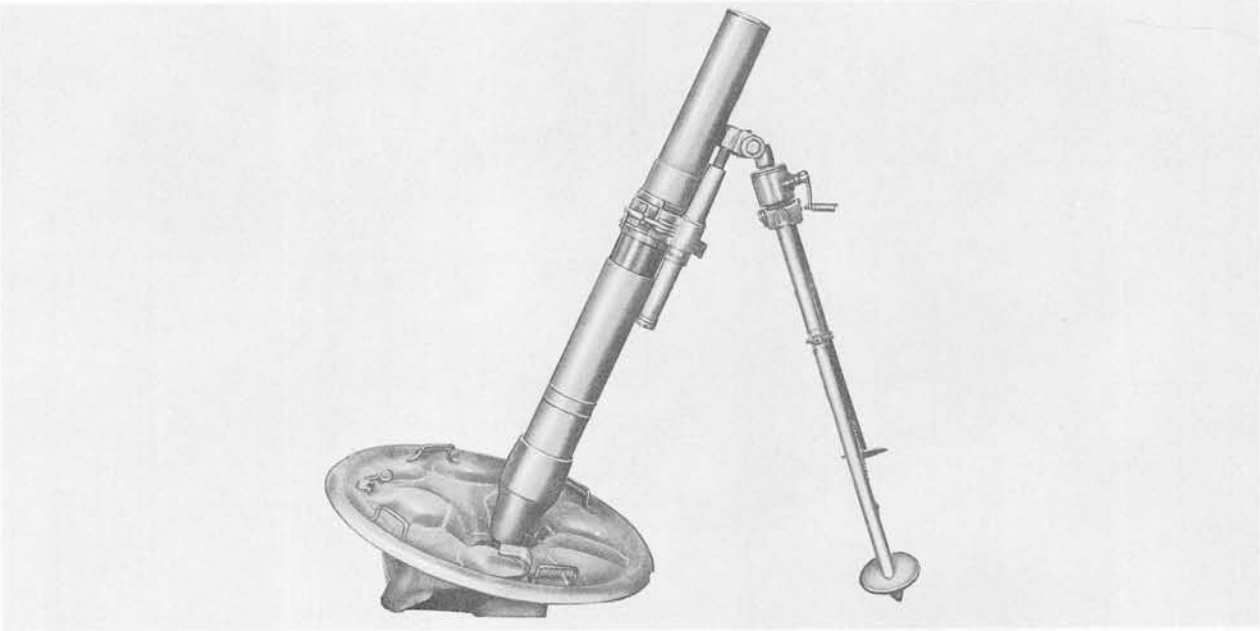
III. PERFORMANCE—Continued

Armor penetration:

Round	Angle of attack	Range		
		914 m (1,000 yds)	1,372 m (1,500 yds)	1,829 m (2,000 yds)
AP	0°	165-mm (6.5 in.)	152-mm (6 in.)	142-mm (5.6 in.)
AP	30°	140-mm (5.5 in.)	130-mm (5.1) in.)	120-mm (4.7 in.)

120–mm Heavy Mortar M42

(12 cm Schwerer Granatenwerfer 42 (12 cm S. Gr. W. 42))



This mortar is almost an identical copy of the Soviet M1938 120-mm mortar and will fire Soviet 120-mm mortar ammunition. The principal differences between the Soviet M1938 120-mm mortar and the German 120-mm M1942 mortar are: (1) on the German model the towing latch is of the double-eye type while on the Soviet model a single towing eye is used; (2) the German mortar weighs 45 pounds more in firing position than its Soviet counterpart and; (3) the German trailer has a slightly wider wheel base.

Both the German M1942 mortar and the Soviet M1938 mortar can be distinguished from the Soviet 120-mm M1943 mortar by their shorter shock absorber housings and slightly different firing mechanism. It is a smooth-bore, muzzle-loading mortar, towed on a two-wheeled transport trailer from which it is removed while placing it in action. The basic components are the barrel and breech cap, bipod, baseplate, sights and transport trailer. It uses the German R. A. 35 optical panoramic sight, mounted on the left side of the bipod.

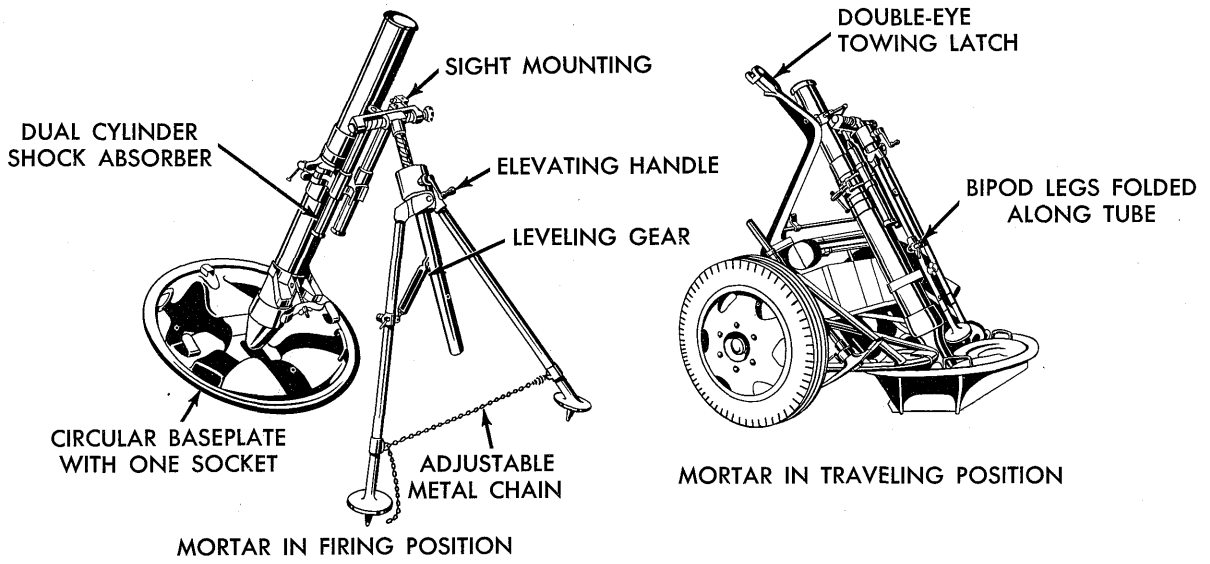
One interesting feature of this mortar is the selective firing mechanism—the striker can be set to have fixed protrusion for drop fire, or can be trigger-fired by a lanyard attached to a firing lever. In addition, the striker can be locked in a retracted position, thus providing a manual safety in event of a misfire.

The salient recognition features of the Model 1942 mortar are: (1) The circular corrugated baseplate with one ball socket; (2) the dual-cylinder shock absorber mechanism on the cradle; (3) the adjustable metal chain attached near the spade grips to control the spread of the bipod legs; (4) the levelling gear connected to the right bipod leg, and the cover of the elevating screw; and (5) the elevating handle on the forward side of the elevating mechanism.

This mortar is in service in limited quantities in the armies of Czechoslovakia, Hungary, and possibly East Germany.

120-mm Heavy Mortar M42

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	120-mm (4.7 in.)
Method of loading	Muzzle-loading
Method of firing	Selective drop fire or trigger
Weight in firing position	285 kg (628 lbs)
Component weights, including harness:	
Bipod assembly	70 kg (154 lbs)
Base plate assembly	110 kg (243 lbs)
Barrel assembly	105 kg (231 lbs)
Transport trailer	275 kg (606 lbs)
Sight with case, RA-35	1.7 kg (3.75 lbs)
Two loaded ammunition cases (6 rounds)	120 kg (265 lbs)
Elevation limits	+45° to +85°
Traverse limits	8° to 45° (without moving bipod) 16° to 84° (by moving bipod)

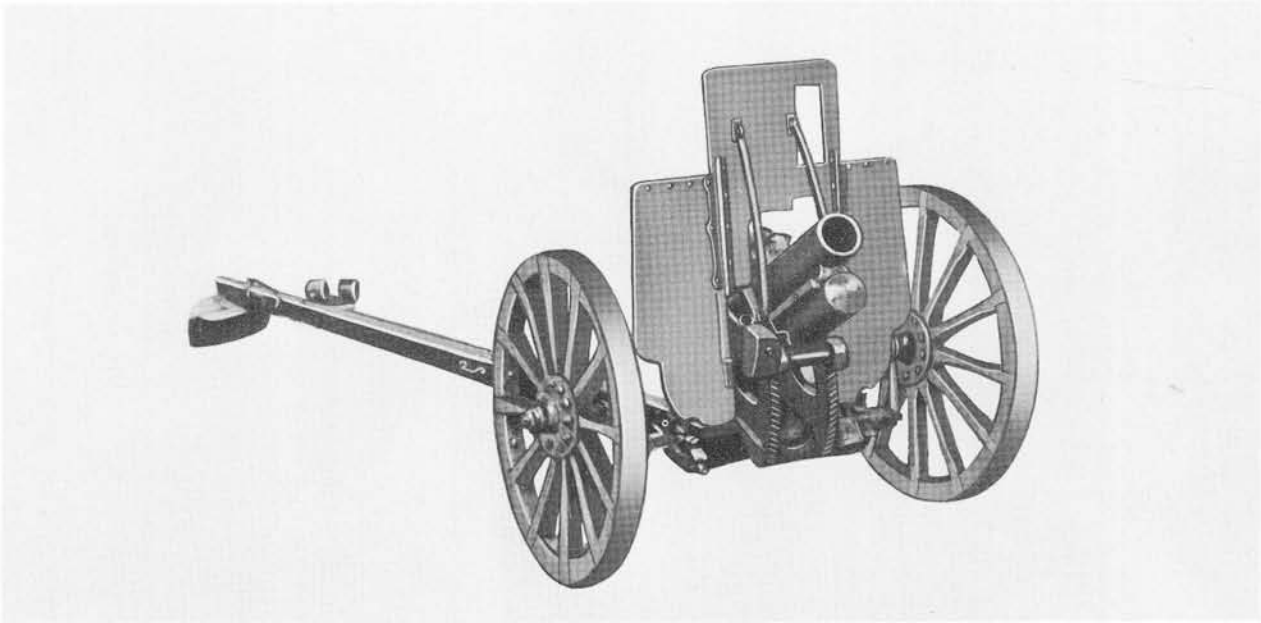
II. AMMUNITION (main types and projectile weights):

HE with Wgr. Z. 38 fuze	15.8 kg (34.75 lbs)
HE with Wgr. Z. 38st fuze	15.8 kg (34.75 lbs)
HE with A. Z. 41 fuze	16 kg (35.27 lbs)

III. PERFORMANCE:

Maximum range with HE	4,260 m (4,660 yds)
Minimum range with HE	300 m (328 yds)
Muzzle velocity:	
With HE (maximum)	283 m/s (929 fps)
With HE (minimum)	122 m/s (400 fps)
Rate of fire	Up to 12 rpm

70–mm Battalion Howitzer Type 92 (1932)



The Japanese 70-mm Battalion Howitzer Type 92 (1932) is a light-weight infantry support weapon designed for easy man-handling and for quick dismantling into three portable loads for transport over difficult terrain. It is a breech loading, wheeled howitzer, but its short range and high elevation put it in the wheeled mortar class.

This equipment being of the "Mountain" or "Pack" type is provided with quick release locking devices, permitting disassembly into pack loads or assembling for action in a matter of seconds.

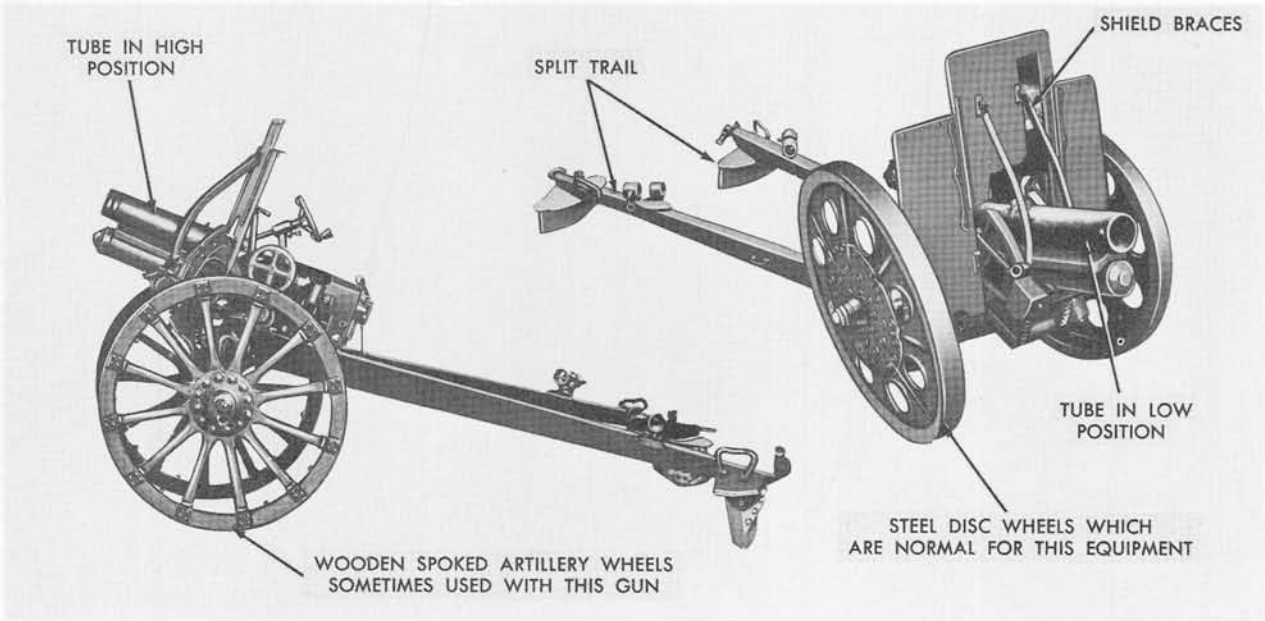
The type of wheels usually found on this equipment are perforated steel disc with steel rims, however, it has also been found equipped with wooden artillery wheels. The gun can be mounted in either a high or a low position on its excentric stub axles. These two positions are illustrated on the recognition feature chart.

Copies of this gun, which were manufactured by Nationalist China and designated the 70-mm Howitzer Type 36 (1947), were captured from the Communists in Korea. Communist China is not believed to be continuing the production of this weapon.

The weapon was used by the Japanese Army and has been used by the Chinese Communist Army as a front line infantry support weapon.

70–mm Battalion Howitzer Type 92 (1932)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	70-mm (2.76 in.)
Weight:	
In firing position	212 kg (468 lbs)
In traveling position	212 kg (468 lbs)
Length of tube (calibers):	
Without muzzle brake	10.9
Elevation limits	−196 to +1,246 mils (−11° to +70°)
Total traverse	801 mils (45°)

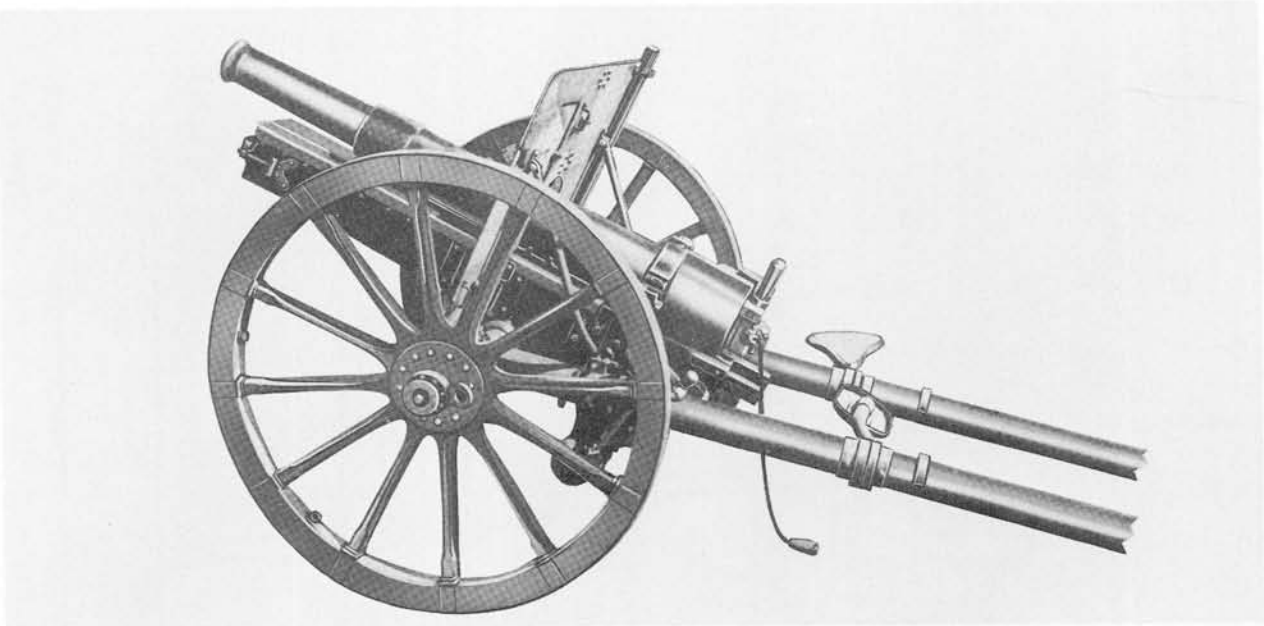
II. AMMUNITION (main types and projectile weight):

HE Type 92	3.77 kg (8.3 lbs)
HE Type 97 Semi-steel	3.95 kg (8.7 lbs)
HEAT Type 2	3.36 kg (7.4 lbs)

III. PERFORMANCE:

Maximum horizontal range (HE Type 92)	2,798 m (3,060 yds
Muzzle velocity (HE Type 92)	198 m/s (650 fps)
Rate of fire	4–6 rpm
Armor penetration:	
HEAT Type 2 (independent of range)	78.7-mm (3.1 in.)

75–mm Regimental Gun Type 41 (1908)



Up until 1935 this gun was known as the Type 41 (1908) mountain gun, but in that year the Japanese Army re-equipped its mountain artillery units with the 75-mm Gun Type 94 (1934) and the 75-mm Gun Type 41 (1908) was turned over to the infantry regiments on the basis of four guns per regiment. These guns were under the direct control of the regimental commander and at that time became known as the Regimental Gun.

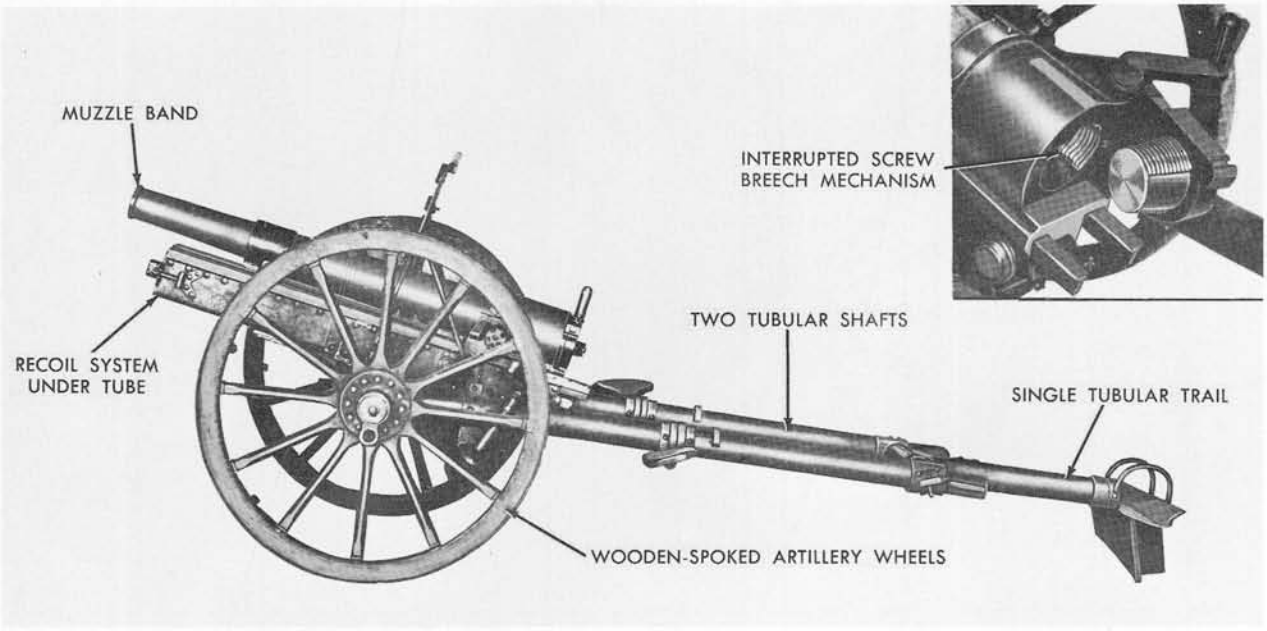
The design of the 75-mm Regimental Gun is almost identical with that of the original 75-mm field gun Type 38 (1905) but can be differentiated by its interrupted thread breechblock.

An unusual trail construction makes this weapon readily recognizable. This consists of two tubular steel shafts extending rearward from the axle for a distance of about 3 feet, 6 inches, where a cross member links the two shafts. From the center of this cross member extends a single pole trail to which is attached a fixed spade. The wheels are of the wooden artillery type with steel tires. For animal transport two wooden shafts replace the single pole trail.

These guns are in service in the Chinese Communist, Chinese Nationalist, Viet Minh armies and are held by the Thai and Indonesian armies.

75–mm Regimental Gun Type 41 (1908)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	917 kg (2,019 lbs)
In traveling position	1,500 kg (3,306 lbs)
Length of tube (calibers):	
Without muzzle brake	29.3
Elevation limits	−318 to +712 mils (−18° to +40°)
Total traverse	213 mils (12°)

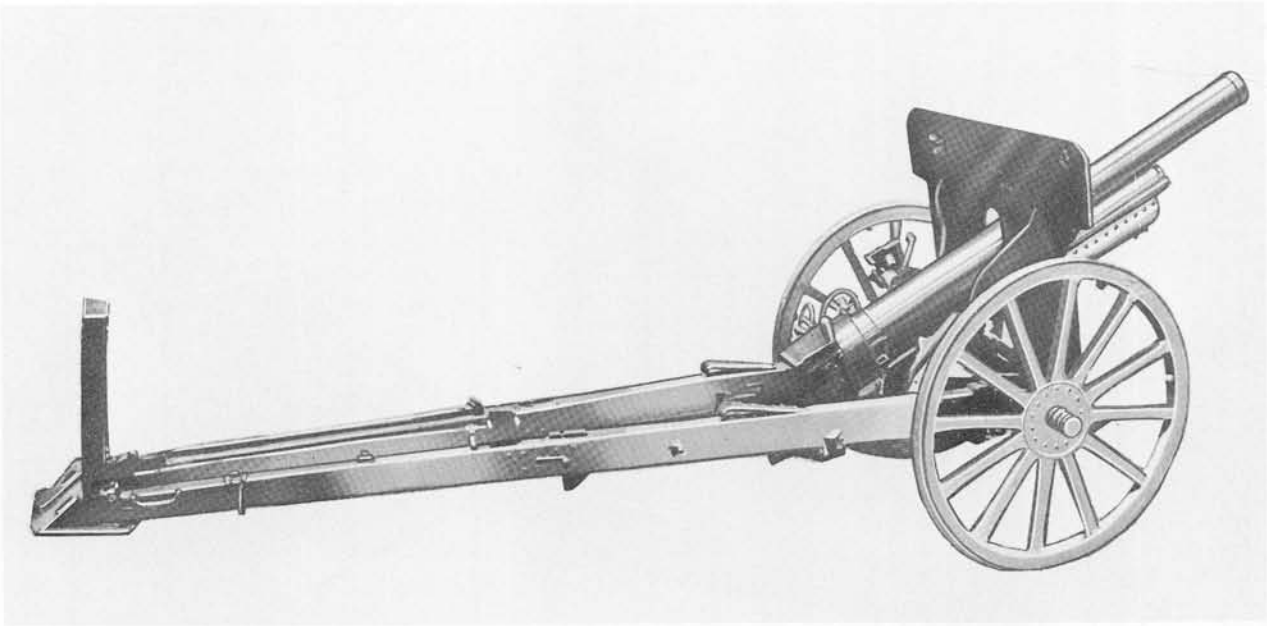
II. AMMUNITION:

HE Type 90	5.67 kg (12.5 lbs)
HE Type 94	6 kg (13.24 lbs)
HEAT Type 2	3.5 kg (7.8 lbs)

III. PERFORMANCE:

Maximum horizontal range (HE Type 90)	10,964 m (11, 990 yds)
Muzzle velocity (HE Type 90)	509 m/s (1,672 fps)
Rate of fire	8 rpm
Armor penetration:	
HEAT Type 2 (independent of range)	84-mm (3.3 in.)

75-mm Mountain Gun Type 94 (1934)



The 75-mm Mountain Gun Type 94 (1934) replaced the 75-mm Mountain Gun Type 41 (1908) in Japanese mountain artillery units before and during World War II.

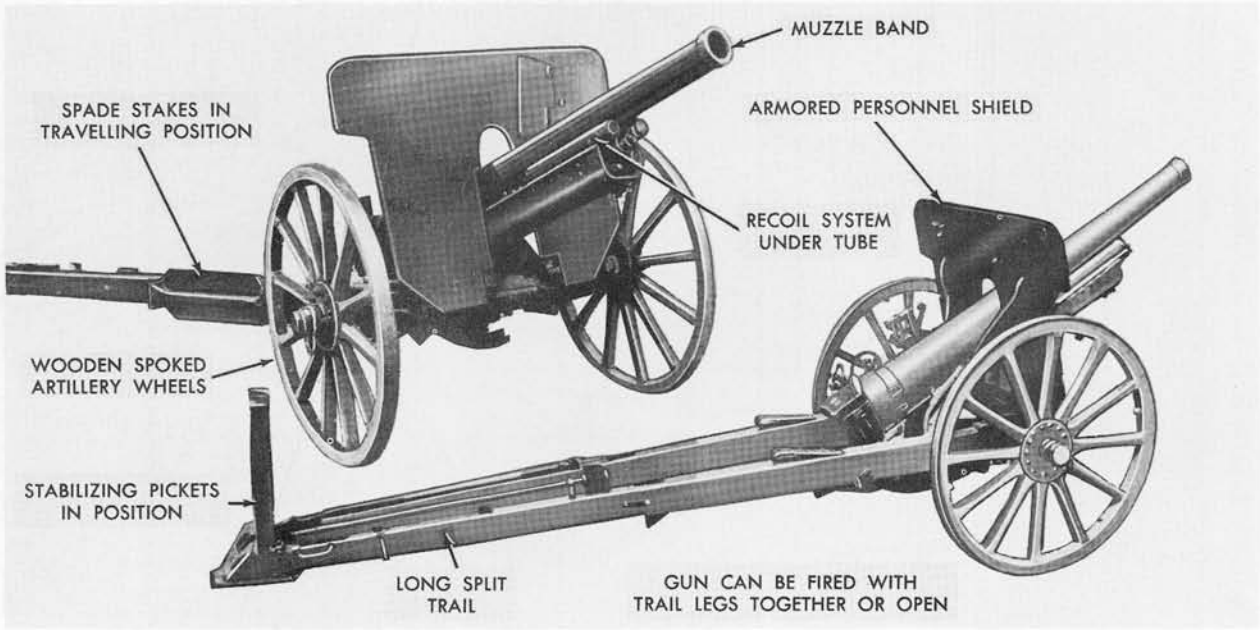
The gun employs a Schneider type, hydropneumatic independent recoil system, a Krupp type horizontal sliding-wedge breechblock, split trails with spade plates for stabilizers, pintle traverse, and an equalizing arrangement which gives it three-point suspension. Since it is trunnioned at the center of balance, it does not require equilibrators. It can be fired with trails closed or open.

This weapon can be rapidly disassembled into 11 units which make six pack loads, the heaviest of which weighs 210 pounds. The lack of a howitzer trajectory and of varying charge is a disadvantage to this gun in its mountain role.

This gun was also manufactured by the Nationalist Chinese after World War II and was captured from the Chinese Communist Army in Korea. It is not known if the Chinese Communist government is continuing the production of this weapon. It is in service in significant quantity in the Chinese Communist Army.

75-mm Mountain Gun Type 94 (1934)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	536 kg (1,182 lbs)
In traveling position	495 kg (1,091 lbs)
Length of tube (calibers):	
Without muzzle brake	20.8
Elevation limits	−178 to +801 mils (−10° to +45°)
Total traverse	712 mils (40°)

II. AMMUNITION:

Type 90 HE pointed	6.32 kg (13.95 lbs)
Type 94 HE	6.01 kg (13.24 lbs)
Type 95 APHE	6.2 kg (13.66 lbs)

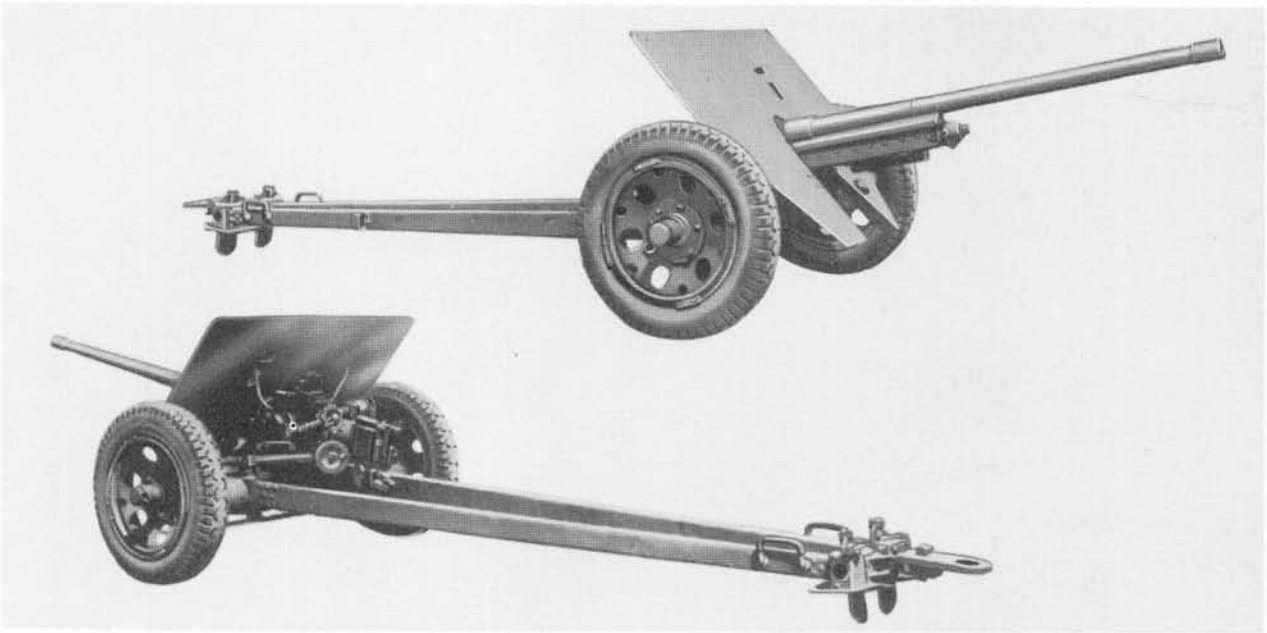
III. PERFORMANCE:

Maximum horizontal range (Type 90 HE pointed)	8,230 m (9,000 yds)
Muzzle velocity (Type 90 HE pointed)	386 m/s (1,266 fps)
Rate of fire	10 to 12 rpm

Armor penetration:

Type	Angle	Range		
		274 m (300 yds)	914 m (1,000 yds)	Any
APHE	0°	71-mm (2.8 in.)	58.4-mm (2.3 in.)	----
HEAT Type 2	0°	----	----	84-mm (3.3 in.)

47-mm Antitank Gun Type 1 (1941)



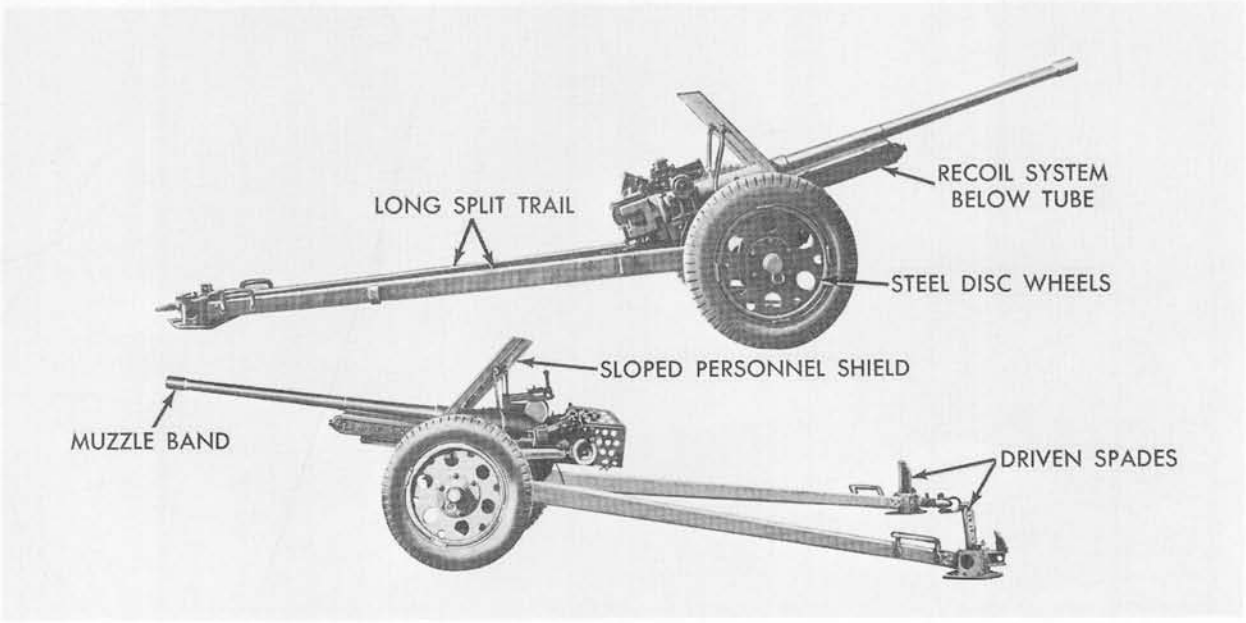
During World War II the 47-mm antitank gun was issued by the Japanese to independent antitank units and armored units. It is light, easily handled, and capable of a high rate of fire. The low silhouette, wide tread, and long-split trail give this gun excellent stability. The steel disc wheels were fitted with sponge rubber filled tires. The gun is an up-calibered copy of the German World War II 37-mm antitank gun.

The tube is of built-up construction and is characterized by a heavy, reinforced muzzle band.

This gun is not an effective weapon against modern tanks but is effective against lightly armored vehicles. It is in service in the Chinese Communist Army.

47-mm Antitank Gun Type 1 (1941)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	47-mm (1.85 in.)
Weight:	
In firing position	754 kg (1,660 lbs)
In traveling position	754 kg (1,660 lbs)
Length of tube (calibers):	
(No muzzle brake)	53.8
Elevation limits	−195.8 to +338 mils (−11° to +19°)
Total traverse	1,068 mils (60°)

II. AMMUNITION (main types and projectile weight):

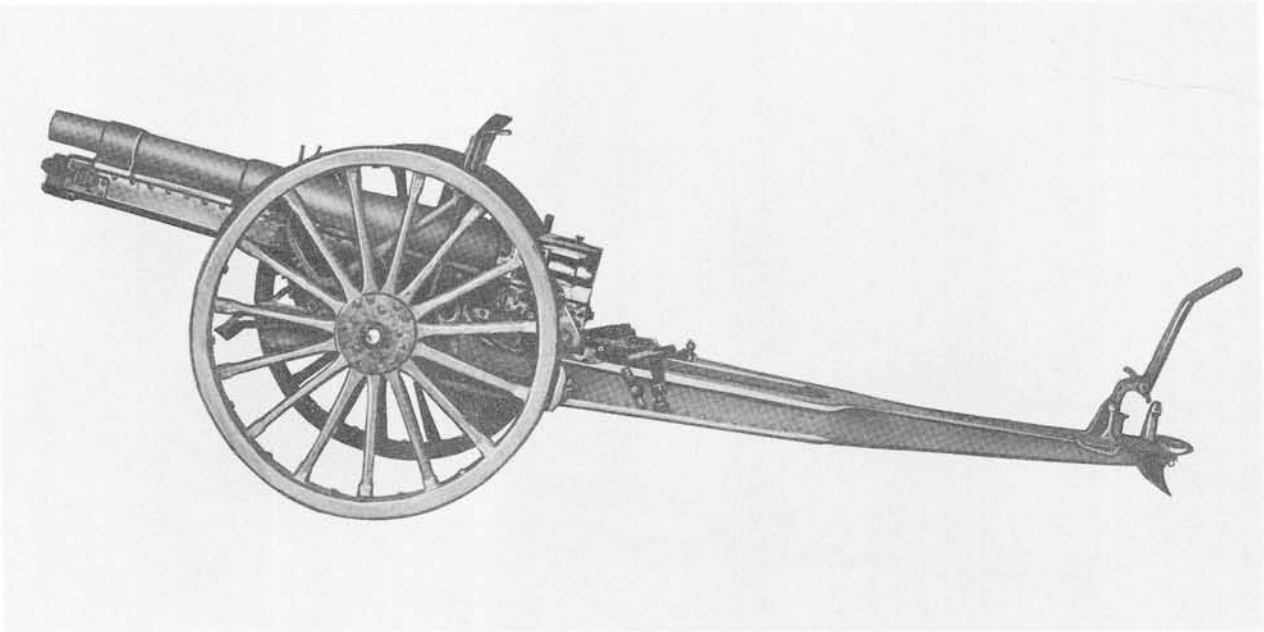
HE	1.4 kg (3.08 lbs)
APHE	1.53 kg (3.37 lbs)

III. PERFORMANCE:

Maximum horizontal range	7,770 m (8,500 yds)
Muzzle velocity:	
HE	834 m/s (2,735 fps)
APHE	823 m/s (2,700 fps)
Rate of fire	12 to 14 rpm
Armor penetration:	

Round	Angle of attack	Range	
		457 m (500 yds)	1,372 m (1,500 yds)
APHE	0°	70-mm (2.75 in.)	41-mm (1.6 in.)
APHE	30°	51-mm (2 in.)	30-mm (1.2 in.)

75-mm Field Gun Type 38 (1905) Improved



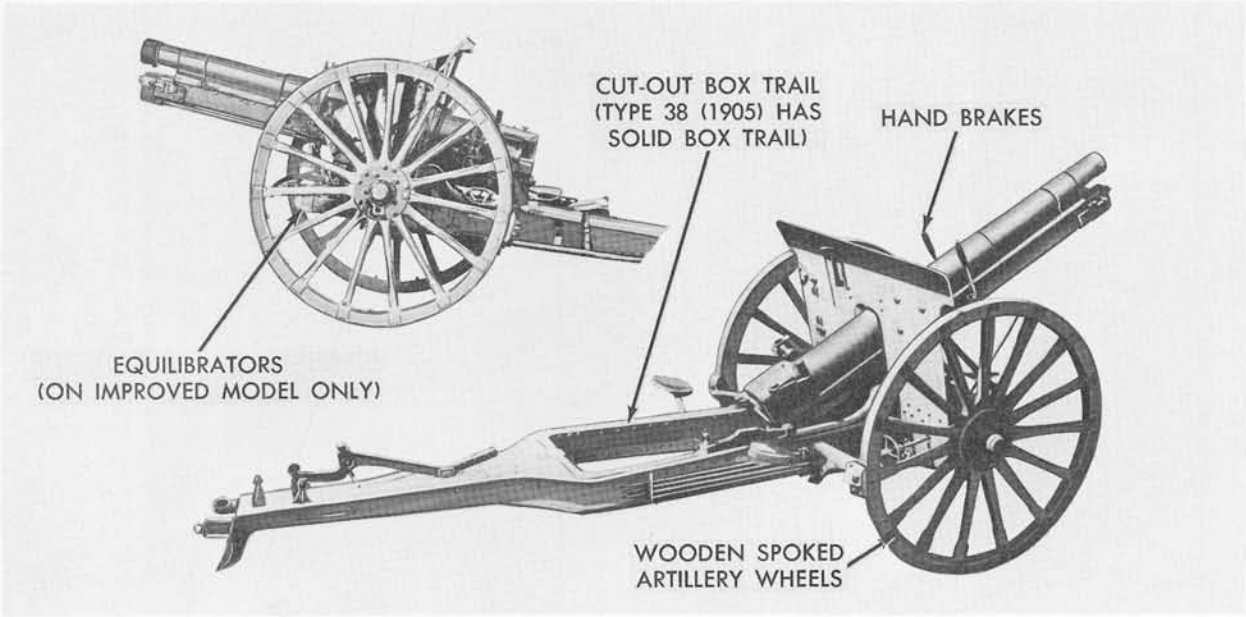
During World War I the Japanese made major modifications in the construction of the original 75-mm Field Gun, Type 38 (1905). The piece was trunnioned forward and equilibrators were added to compensate for muzzle preponderance. The plain box trail was modified into an open box. This allowed for a maximum elevation of 43°. Axle traverse was retained, thus limiting the effectiveness of this piece. The spring recoil system also remained, but was made variable to permit firing at higher elevations. The most significant result of these improvements was a 1,500-yard increase in range over the unmodified type 38 (1905) gun.

The 75-mm Gun Type 38 (1905), Improved, was never fully superseded by the 75-mm Gun Type 95 (1935) as a divisional artillery piece.

Both the Type 38 and the Type 38, Improved, are in service in the Chinese Communist Army.

75-mm Field Gun Type 38 (1905) Improved

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	1,135 kg (2,500 lbs)
In traveling position	1,910 kg (4,207 lbs)
Length of tube (calibers):	
(No muzzle brake)	30.5
Elevation limits	−142 to +765 mils (−8° to +43°)
Total traverse	124 mils (70°)

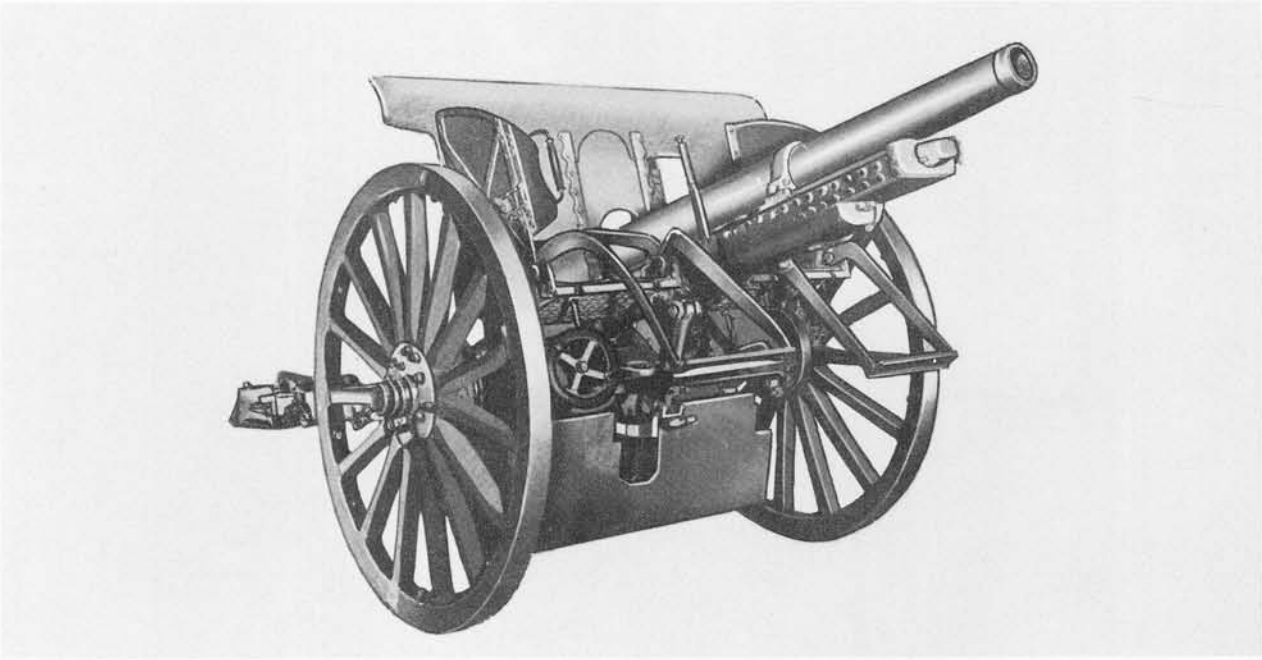
II. AMMUNITION (main types and projectile weight):

HE, Type 90, pointed	6.33 kg (13.95 lbs)
HE, Type 94	6.01 kg (13.24 lbs)
AP, Type 95	6.2 kg (13.66 lbs)

III. PERFORMANCE:

Maximum horizontal range, (HE Type 90 pointed))	11,960 m (13,080 yds)
Muzzle velocity, (HE Type 90 pointed)	603 m/s (1,978 fps)
Rate of fire	10 to 12 rpm

75-mm Field Gun Type 95 (1935)



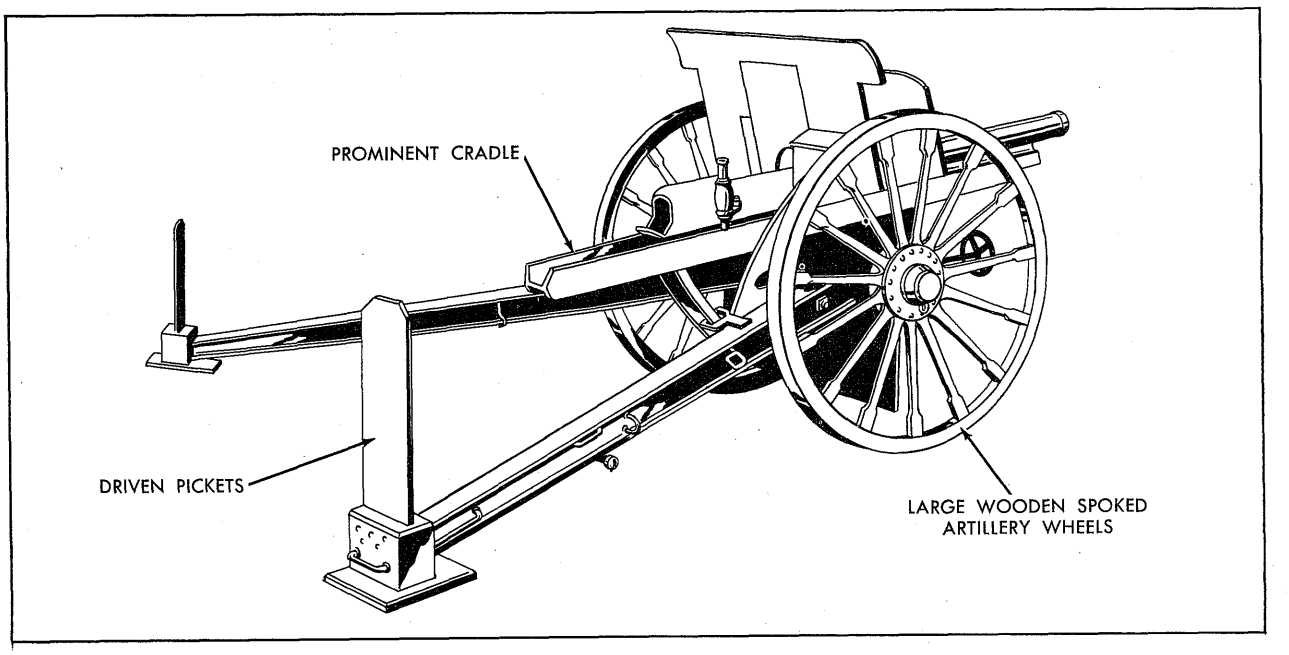
The 75-mm Gun Type 95 (1935) was designed by the Japanese to supersede the "75-mm Gun Type 38 (1905) Improved," as a divisional artillery piece. However, it never did replace the older gun to any marked extent. It was derived from the French 75-mm Schneider M1933 which it closely resembles. The 75-mm Gun Type 95 (1935) is lighter in weight than either the 75-mm Schneider or the 75-mm Type 38 (1905), Improved, which it was intended to replace.

The weapon has an autofrettaged tube with horizontal sliding breech block, hydropneumatic recoil mechanism, and spring equilibrators. It is mounted on large, wooden artillery wheels. The split trail uses driven spades to increase its stability.

It is known to be in service in the Chinese Communist Army.

75-mm Field Gun Type 95 (1935)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	1,107 kg (2,438 lbs)
In traveling position	1,931 kg (4,253 lbs)
Length of tube (calibers):	
(No muzzle brake)	30.67
Elevation limits	−142 to +765 mils (−8° to +43°)
Total traverse	890 mils (50°)

II. AMMUNITION:

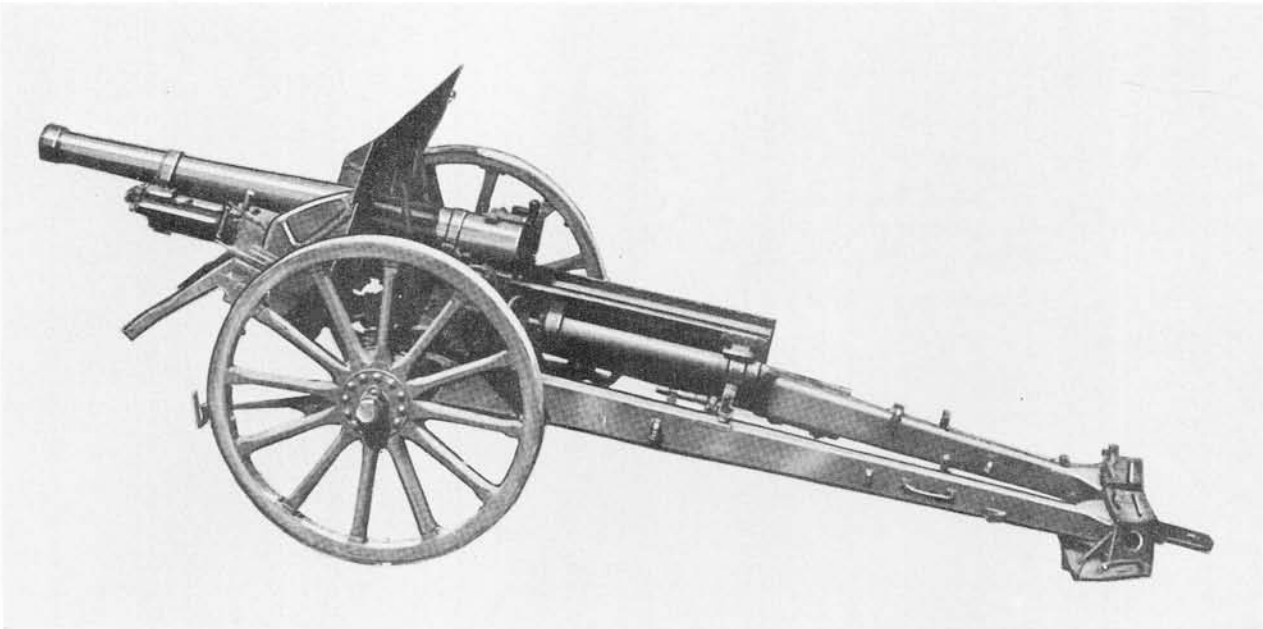
HE Type 90, pointed	6.3 kg (13.95 lbs)
HE Type 94	6.01 kg (13.24 lbs)
AP Type 95	6.2 kg (13.66 lbs)
HEAT Type 2	3.54 kg (7.81 lbs)

III. PERFORMANCE:

Maximum horizontal range (HE Type 90) pointed.	10,662 m (11,660 yds)
Muzzle velocity (HE Type 90 pointed)	518 m/s (1,700 fps)
Rate of fire (maximum)	10–12 rpm
Armor penetration:	

Round	Angle of attack	Range
		Any
HEAT Type 2	0°	84-mm (3.3 in.)

105-mm Howitzer Type 91 (1931)



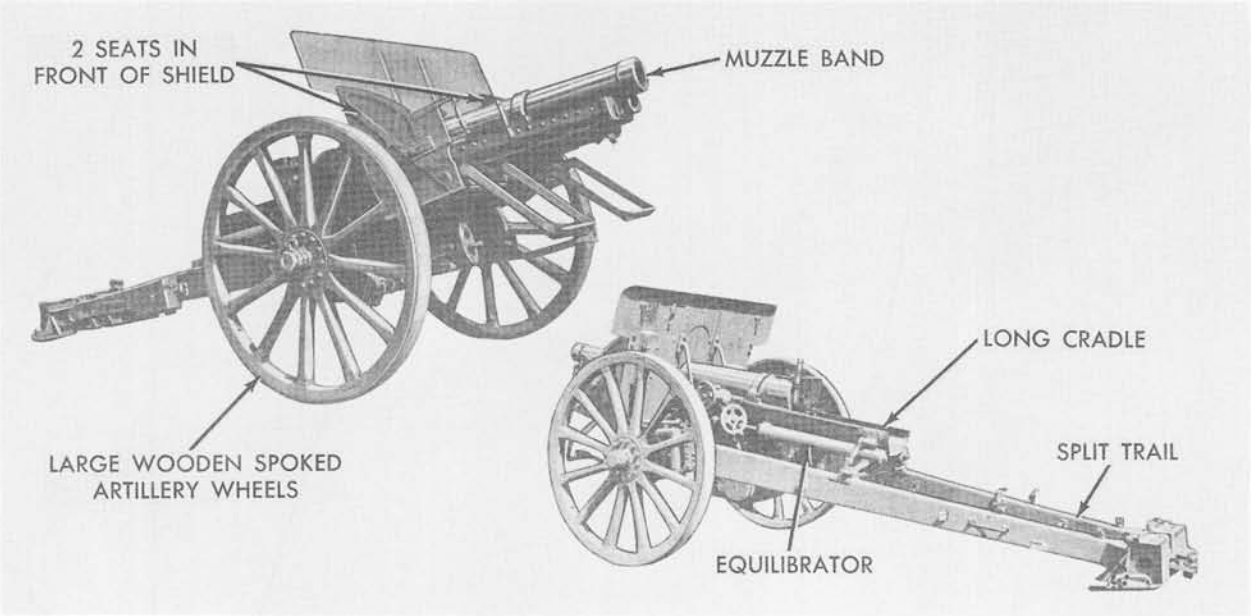
The Japanese 105-mm Howitzer, Type 91 (1931) is, by U. S. standards, a crude looking piece. It is much smaller and lighter than the German and U. S. howitzers of the same caliber, weighing even less than the average 75-mm gun used in Europe during and after World War I. Despite its lightness and appearance of not having been quite finished, it is capable of throwing a 35-pound shell very nearly as far as its United States counterpart.

This howitzer is readily identified by its short tube and long cradle which protrudes well to the rear of the breech ring. It was the organic weapon of Japanese divisional artillery units.

It is in service in the Chinese Communist Army and was used in Korea.

105-mm Howitzer Type 91 (1931)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	105-mm (4.1 in.)
Weight:	
In firing position	1,785 kg (3,306 lbs)
In traveling position	1,891 kg (4,364 lbs)
Length of tube (calibers):	
(No muzzle brake)	24
Elevation limits	−89 to +801 mils (−5° to +45°)
Total traverse	712 mils (40°)

II. AMMUNITION:

HE, Type 95 pointed	14.3 kg (31.5 lbs)
HE Type 95	15.98 kg (35.2 lbs)
HE Type 14 substitute projectile "B"	15.66 kg (34.2 lbs)
AP Type 1	15.9 kg (35.06 lbs)

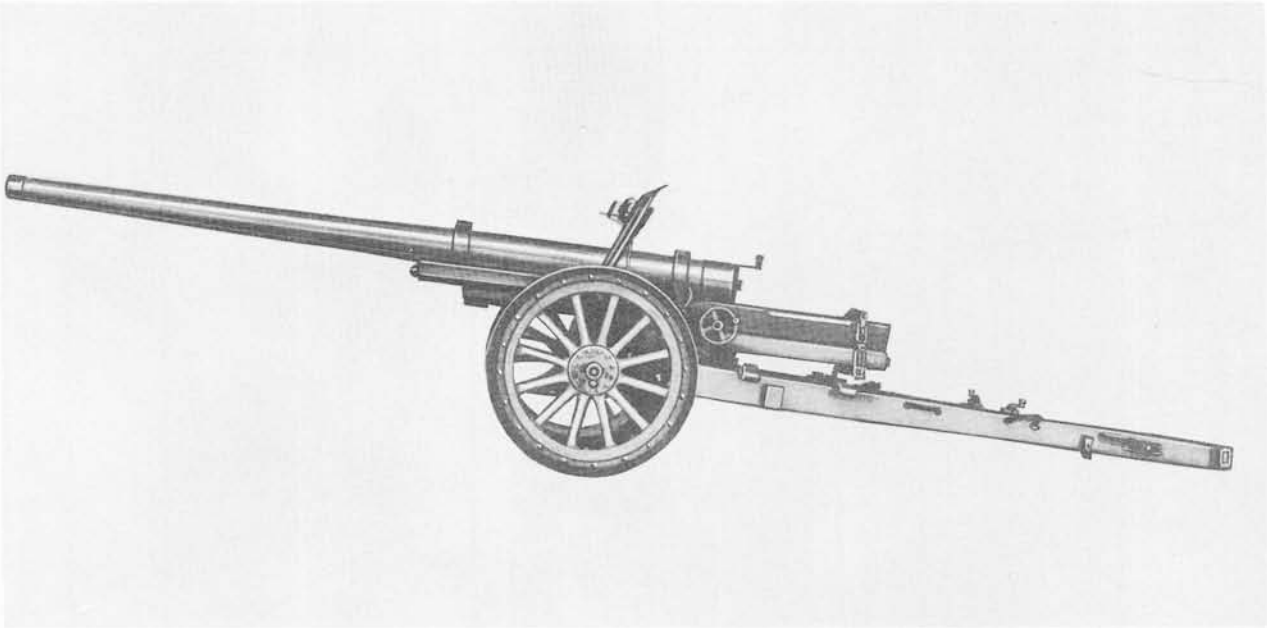
III. PERFORMANCE:

Maximum horizontal range (HE pointed)	10,516 m (11,500 yards)
Muzzle velocity:	
HE Type 95 pointed	442 m/s (1,450 fps)
HE Type 95	419 m/s (1,375 fps)
HE Type 14 "B"	427 m/s (1,400 fps)
AP Type 1	419 m/s (1,375 fps)
Rate of fire	6–8 rpm

Armor penetration:

Round	Angle of attack	Range		
		229 m (250 yds)	457 m (500 yds)	914 m (1,000 yds)
AP	0°	75-mm (2.95 in.)	71.1-mm (2.8 in.)	66-mm (2.6 in.)

105-mm Gun Type 92 (1932)

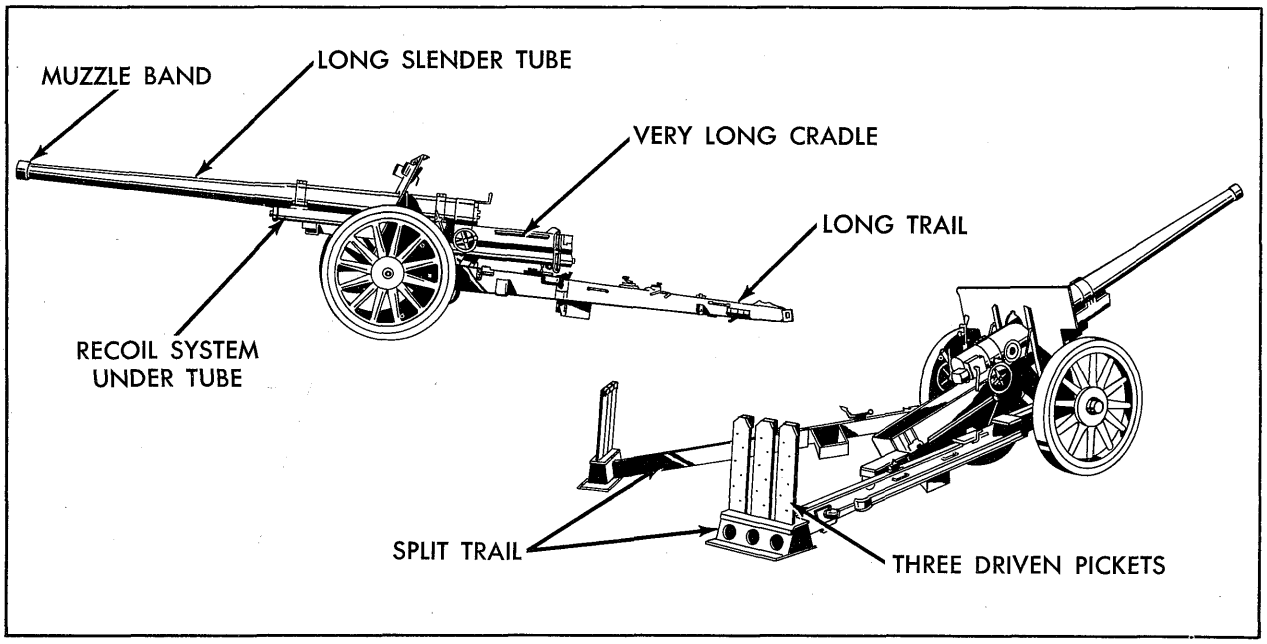


This piece almost completely replaced its predecessor, the 105-mm Gun Type 14 (1925) as an army artillery piece in the Japanese Army during World War II. The most remarkable fact about this gun is the range it attains with a 35-pound shell in proportion to its unusually low weight by United States standards. Its long tube, short cradle, long trails, and relatively low silhouette give it the most streamlined appearance of any Japanese artillery piece.

In the traveling position the tube is retracted by means of a winch, which is attached to the cradle. There are two equilibraters positioned along both sides of the bottom of the cradle, lengthwise. There are three driven pickets to each spade of the split trail carriage. It is known to be in service in the Chinese Communist Army.

105-mm Gun Type 92 (1932)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL:

Caliber	105-mm (4.14 in.)
Weight:	
In firing position	3,723 kg (8,200 lbs)
In traveling position	4,358 kg (9,600 lbs)
Length of tube (calibers):	
(No muzzle brake)	45
Elevation limits	−89 to +800 mils (−5° to +45°)
Total traverse	641 mils (36°)

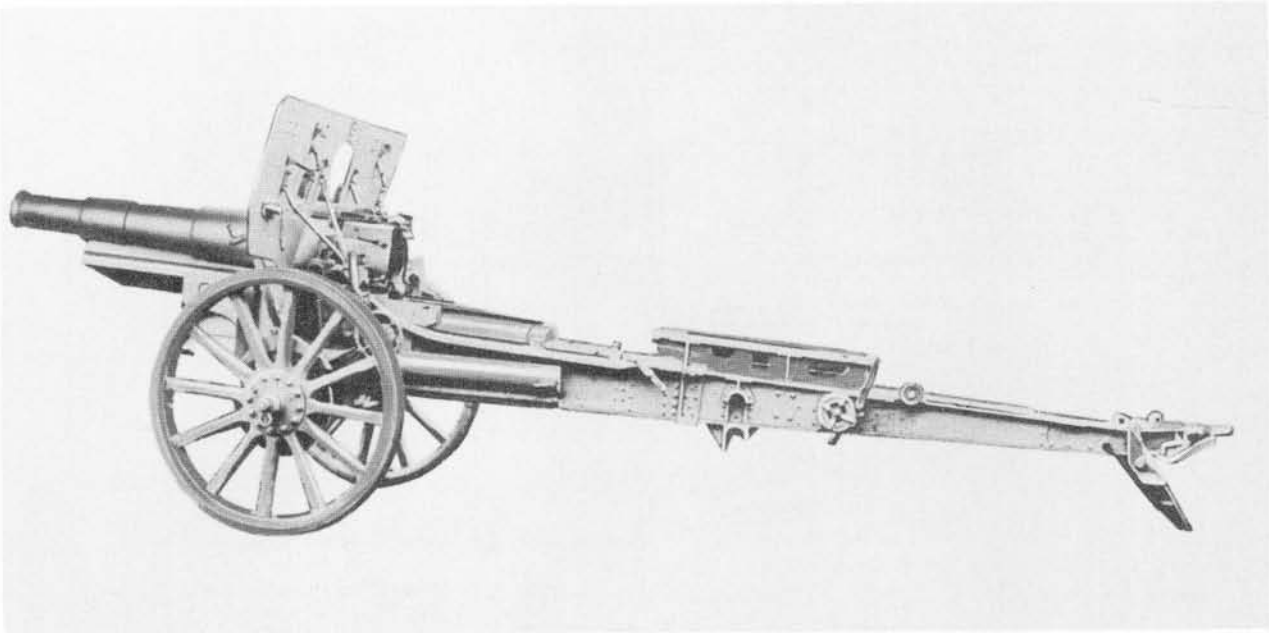
II. AMMUNITION (main types and projectile weight):

HE Type 95	15.74 kg (34.67 lbs)
AP Type 95	15.9 kg (35 lbs)

III. PERFORMANCE:

Maximum horizontal range	18,288 m (20,000 yds)
Muzzle velocity (HE)	762 m/s (2,500 fps)
Rate of fire (maximum)	6–8 rpm
Armor penetration	Not available.

150–mm Howitzer Type 4 (1915)



The 150-mm Howitzer Type 4 (1915) was adopted during World War I to replace the 150-mm Howitzer Type 38 (1905). It was manufactured in considerable quantities and remained the standard Japanese medium artillery piece until 1936, when it was replaced, although never completely, by the 150-mm Howitzer Type 96 (1936).

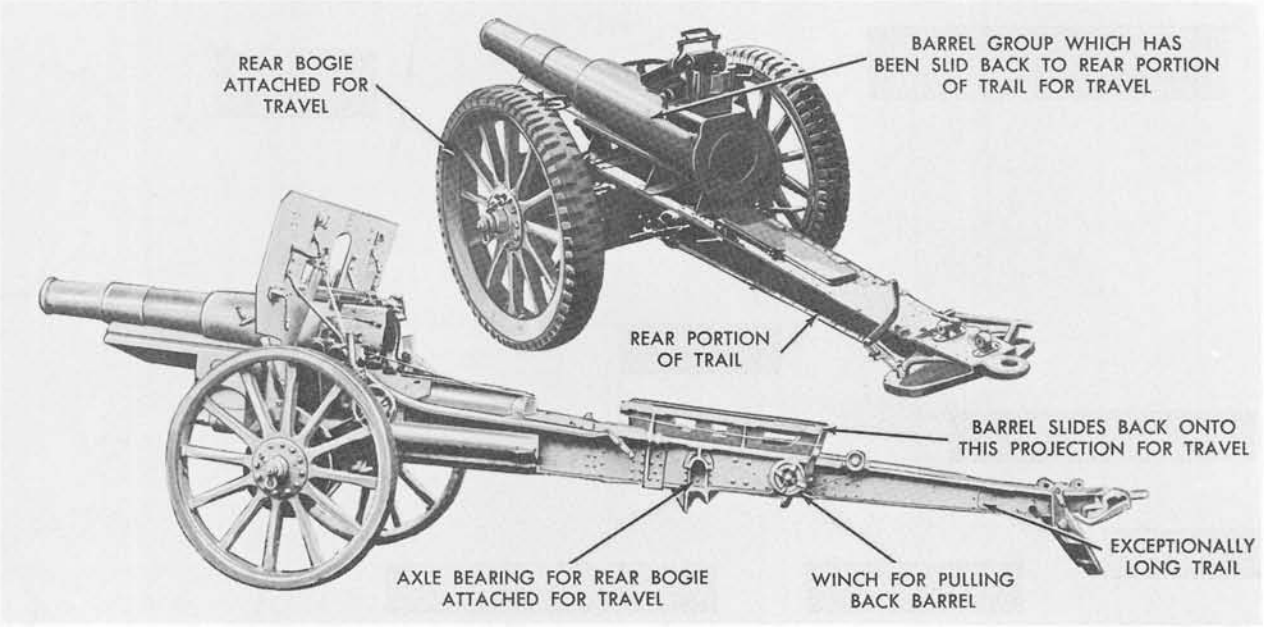
The most remarkable characteristic of this gun is its extreme lightness in relation to the weight of the ammunition it fires. For travel the howitzer is broken down into two loads, the tube and rear half of the trail in one load and the rest of the carriage in the other load. The trail is separated into two parts and a bogie placed under the rear portion. Before separation into two parts the tube is slid back to the rear part of the trail on which it is transported.

The Type 4 howitzer was the first Japanese artillery piece to employ a hydropneumatic recoil system in place of a spring recoil mechanism. The construction of the trail permits extreme elevation of the gun which increases its usefulness in jungle or hilly country.

One of the outstanding recognition features of this weapon is its exceptionally long semi-open box trail. This weapon is in service in the Chinese Communist Army and was used in combat in Korea.

150–mm Howitzer Type 4 (1915)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL:

Caliber	149.1-mm (5.87 in.)
Weight:	
In firing position	2,792 kg (6,150 lbs)
In traveling position:	
Barrel	2,196 kg (4,838 lbs)
Cradle	2,147 kg (4,730 lbs)
Length of tube (calibers):	
(No muzzle brake)	14.3
Elevation limits	−89 to +1,157 mils (−5° to +65°)
Total traverse	107 mils (6°)

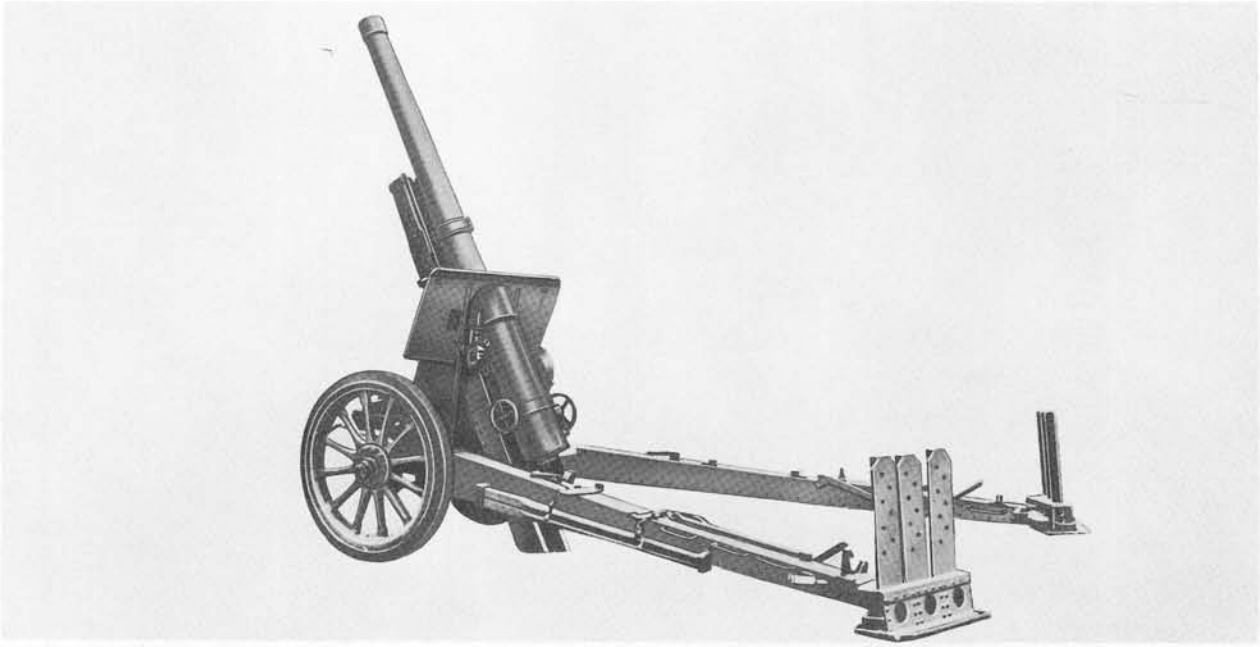
II. AMMUNITION (main types and projectile weights):

HE Type 92	35.96 kg (79.2 lbs)
HE Type 92 pointed	30.96 kg (68.2 lbs)
APHE Type 95	35.73 kg (78.7 lbs)

III. PERFORMANCE:

Maximum horizontal range (HE Type 92, pointed)	9,875 m (10,800 yds)
Muzzle velocity	436 m/s (1,430 fps)
Rate of fire (maximum)	3–4 rpm
Armor (penetration)	Not available

150–mm Howitzer Type 96 (1936)



The 150-mm Howitzer Type 96 (1936) is a well-designed and effective weapon. It was designed as a replacement for the 150-mm Howitzer Type 4 (1915) but never fully replaced it. The Type 96 is heavier than the Type 4, has a somewhat greater range, and travels as a single load drawn by trailer. The Japanese employed this with both army and divisional artillery units.

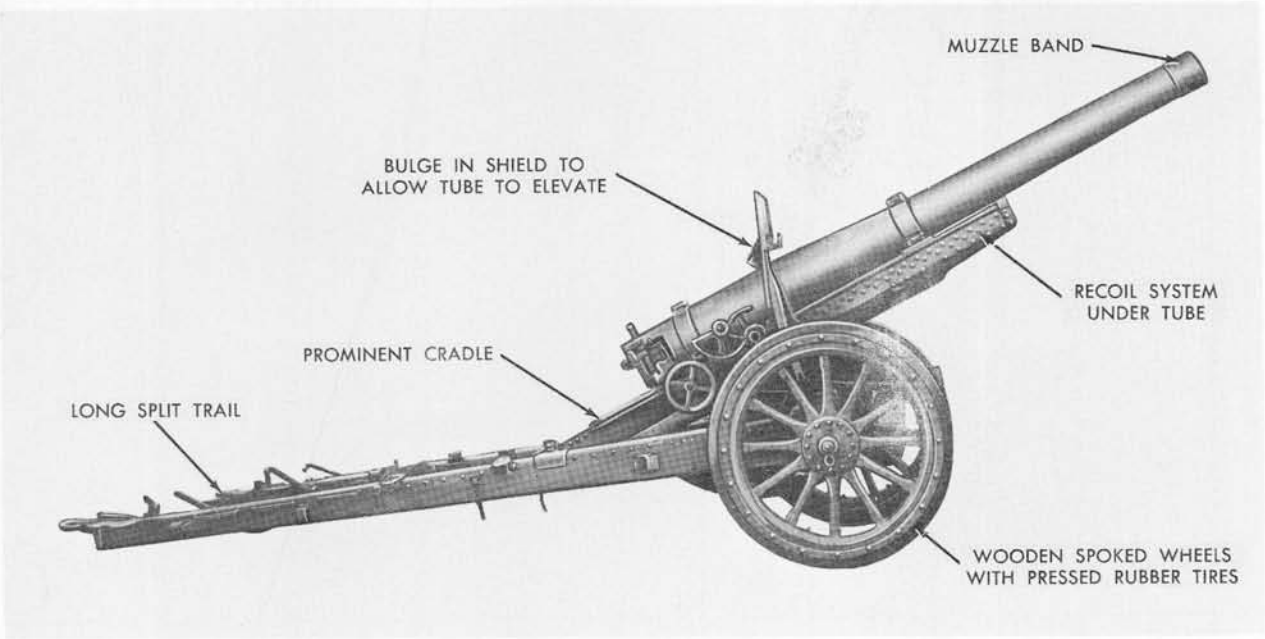
One of the outstanding characteristics of this weapon is its extreme elevation of 75 degrees. This maximum elevation, however, can be used only when a deep pit is dug to permit the rear end of the cradle to clear the ground. The gun cannot be fired at an elevation greater than 45 degrees without the construction of such a recoil pit.

The piece is mounted on a straight axle with sturdy, rubber-shod wooden wheels, and long split trails, with three driven pickets on each space. For transportation a limber is attached to the closed trail. The equilibrators are fastened to the rear of the cradle. In travel the carriage is jacked up on a leaf spring. In firing position the leaf spring is depressed so the piece rests on its axle.

This weapon is known to be in service in the Chinese Communist Army.

150–mm Howitzer Type 96 (1936)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	150-mm (5.9 in.)
Weight:	
In firing position	4,086 kg (9,000 lbs)
In traveling position	4,924 kg (10,855 lbs)
Length of tube (calibers):	
(No muzzle brake)	23.37
Elevation limits	−89 to +1,335 mils (−5° to +75°)
Total traverse	534 mils (30°)

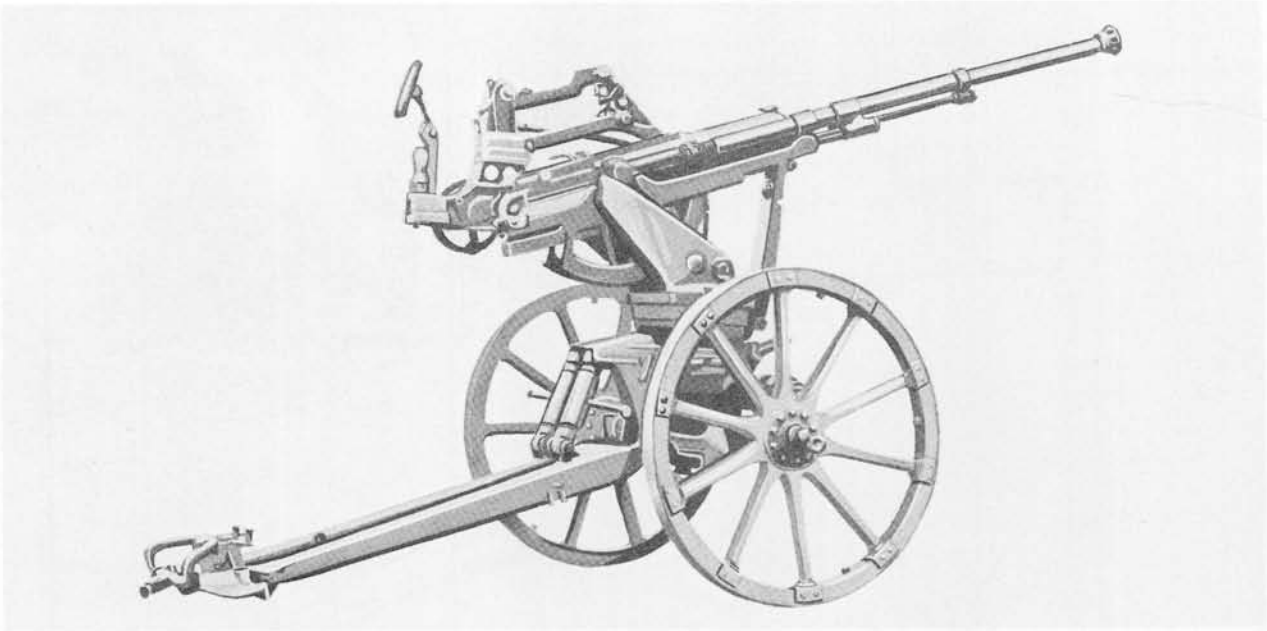
II. AMMUNITION:

HE Type 92	35.96 kg (79.2 lbs)
HE Type 92 pointed	30.96 kg (68.2 lbs)

III. PERFORMANCE:

Maximum horizontal range:	
(Type 92 HE)	10,428 m (11,400 yds)
Muzzle velocity	500 m/s (1,640 fps)
Rate of fire	3–4 rpm
Armor penetration	No AP round provided

20–mm Light Automatic Antiaircraft Gun Type 98 (1938)



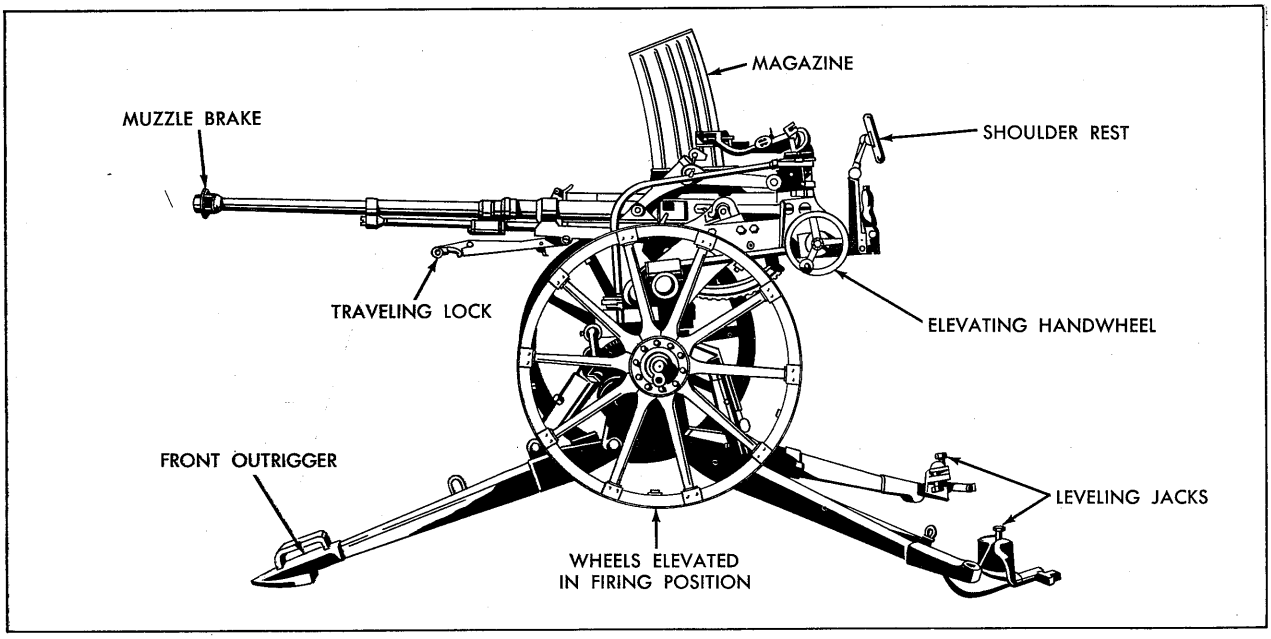
The 20-mm light automatic antiaircraft gun type 98 (1938) was the standard mobile antiaircraft automatic weapon used by the Japanese Army during World War II.

The weapon has a two-wheel, split trail mount and can be drawn by draft animals or towed by truck. It can also be dismantled and carried by pack or hand. The gun is normally fired from the tripod formed by its split trail and a forward detachable outrigger. It can also be fired from its wheels, although accuracy and field of fire under these conditions are impaired.

With a rate of fire of only 120 rpm this 20-mm gun is not considered an effective automatic antiaircraft gun. It is in service in the Chinese Communist, Viet Minh, and Thai armies.

20–mm Light Automatic Antiaircraft Gun Type 98 (1938)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL:

Caliber	20-mm (0.787 in.)
Weight:	
In firing position	379 kg (835 lbs)
In traveling position	379 kg (835 lbs)
Length of tube (calibers):	
With muzzle brake	73
Elevation limits	−178 to +1,513 mils (−10° to +85°)
Total traverse	6,400 mils (360°)

II. AMMUNITION (main types with projectile weights):

HE (Tracer self-destroying)	132.4 gm (4.67 oz)
AP (Tracer)	162 gm (5.72 oz)

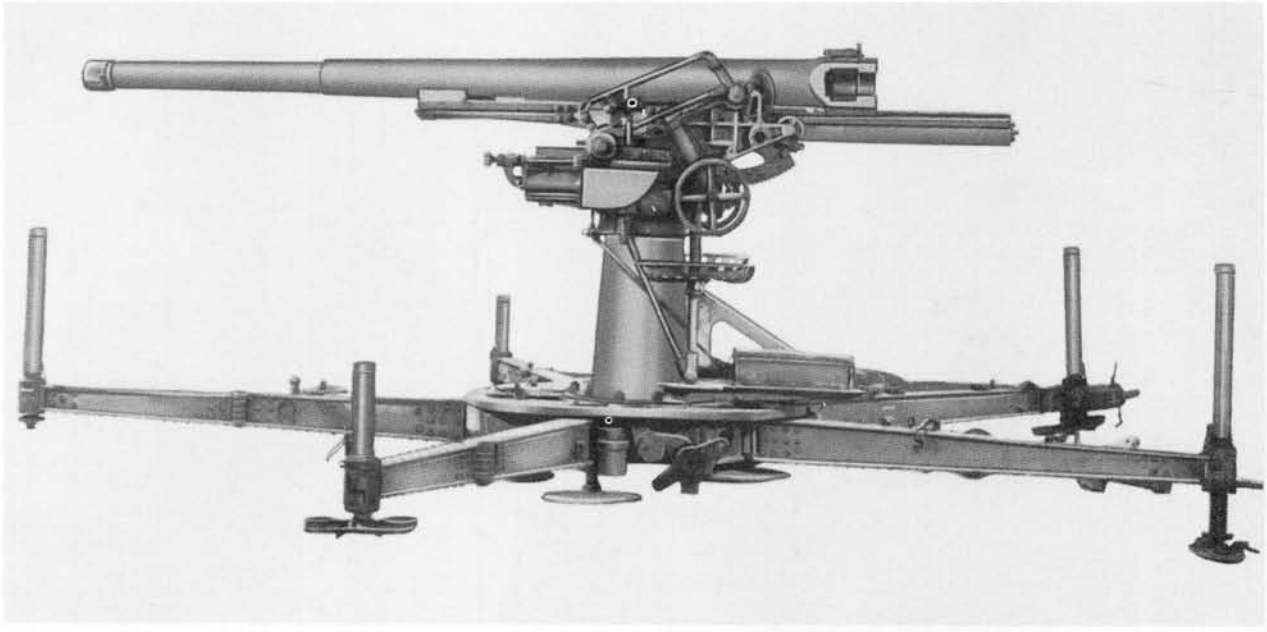
III. PERFORMANCE:

Maximum horizontal range	6,400 m (7,000 yds)
Maximum vertical range	3,658 m (12,000 ft)
Muzzle velocity:	
HE-T	914 m/s (3,000 fps)
AP-T	792 m/s (2,600 fps)
Rate of fire	120 rpm

Armor penetration:

Round	Angle of attack	Range			
		250 m (273 yds)	500 m (547 yds)	1,000 m (1,094 yds)	1,500 m (1,641 yds)
AP-T	0°	30-mm (1.18 in.)	23-mm (0.91 in.)	15-mm (0.59 in.)	9.9-mm (0.39 in.)

75-mm Antiaircraft Gun Type 88 (1928)

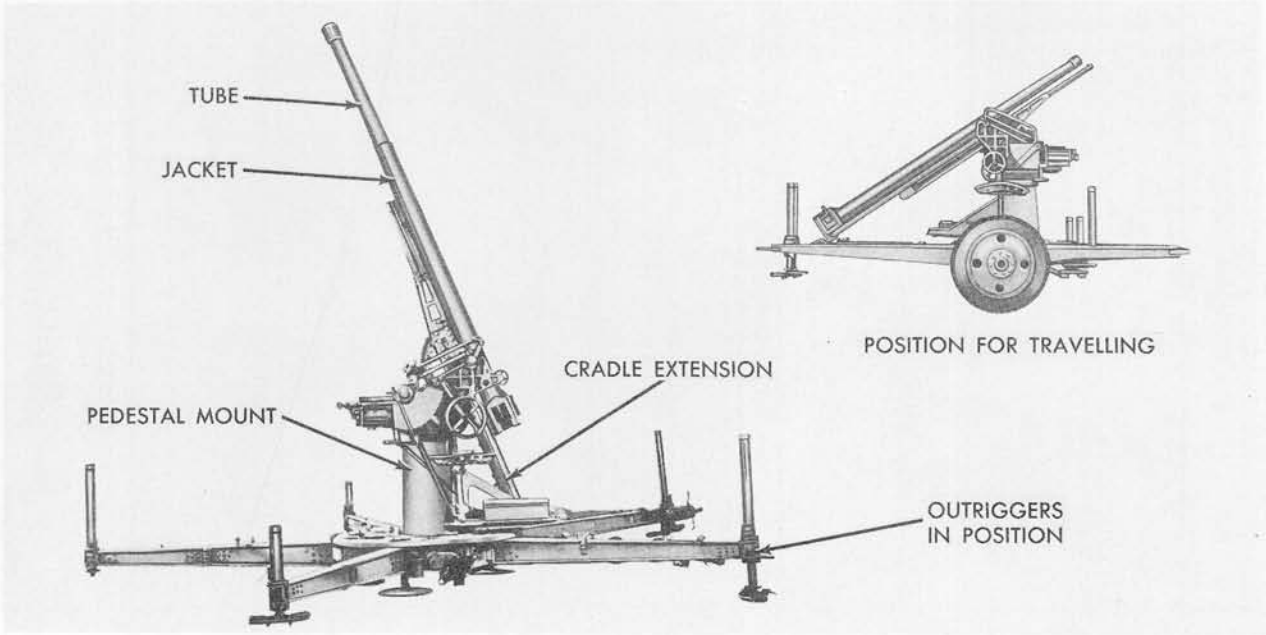


Designated by the Japanese as the "7-cm Field High-Angle Gun," this weapon was the standard medium antiaircraft gun with which the field units of the Japanese Army entered World War II. It was developed from the earlier Type 11 (1922) 75-mm antiaircraft gun which reportedly was a copy of a French antiaircraft gun of World War I origin. The Type 88 is mounted on two rubber-tired wheels and can be put into action with great rapidity. By current standards the gun is completely obsolete.

The Type 88 is known to be available to the Chinese Communist Army but has not been identified in the hands of troops.

75-mm Antiaircraft Gun Type 88 (1928)

RECOGNITION FEATURES



CHARACTERISTICS

I. PHYSICAL DATA:

Caliber	75-mm (2.95 in.)
Weight:	
In firing position	2,447 kg (5,390 lbs.)
In traveling position	2,742 kg (6,040 lbs.)
Length of tube (calibers):	
(No muzzle brake)	44.1
Elevation limits	−125 to +1,513 mils (−7° to +85°)

II. AMMUNITION:

HE Type 90 AA pointed	6.52 kg (14.37 lbs)
HE Type 90 pointed	6.36 kg (14 lbs)

III. PERFORMANCE:

Maximum horizontal range	13,780 m (15,070 yds)
Maximum vertical range	8,991 m (29,500 ft)
Muzzle velocity	720 m/s (2,360 fps)
Rate of fire	10–15 rpm
Armor penetration	No AP round provided

[AG 300.7 (21 Jun 55)]

[redacted]

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9–510 (AA–AC), Ord Sp Svc Det (1)

NG: None.
USAR: None.
For explanation of abbreviations used, see SR 320–50–1.

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